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# SCIENCE FICTION AGE



COVER: Chris Moore captures the mystery and excitement of the universe (see our Science column on page 34) for Orson Scott Card's Enter the Trench.

ABOVE: Luke Skywalker and his trusty Tauntaun are about to face the Wampa Ice Creature. See our Gallery on page 86, featuring the Star Wars art of Ralph McQuarrie.

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By Don Webb

The alien Masters were able to keep humanity enthralled for centuries...until Zatar the Collaborator became Zatar the Redeemer.

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By David Brin

Earth had finally made first contact with the Galactic Federation of which we'd dreamed...which might leave us more terribly alone than ever before.

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By James Gunn

Science vs. faith. Medicine vs. prayer. Whichever wins, the world will be forever changed.

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Dear Sirs:

I quite enjoyed the Science section in the September issue by Arlan Andrews and Yoji Kondo. It was very intriguing. If there is an infinite number of existences in the universe (or multiverse), I do not know if they could be considered parallel. The word "parallel" would insinuate that each is its own creature and they continue to infinity without ever touching each other. This could be true just like my other guess a person could make, but there are a great number of variables to consider before even beginning to guess how "it" works, whatever "it" may be. I am only seventeen and have a hard enough time with geometry, so I will not be unlocking any great cosmic key in the near future. Maybe one of my other selves in a different reality might come up with something. The laws of probability and the laws of time are beyond this version of myself.

Now, assuming there is an infinite number of realities, the distance between each one would probably be infinitely small. We could be closer to other versions of reality than we realize. We all have had times in our life when we thought we saw someone out of the corner of our eye, but no one was there. I think (or at least I hope) that we all have had times when we thought someone was calling for us when in fact no one was. All of this could be coming from somewhere else. Now, after that little trip to *The Twilight Zone*, don't we all feel better?

Basically, this whole story revolves around the word "if." It deals with what could be. All we know for sure is that we at least exist here.

Daniel M. Staten

Dear Mr. Edelmann:

In the September issue of your magazine there was a thought-provoking essay by George Zebrowski on "forgotten" SF writers.

It came as a great shock to me to realize that these writers of my youth are now largely ignored and forgotten. One writer, William Tenn, I recall with particular affection, as he helped me qualify as a high school teacher.

In 1961, in my final college examinations, one question on the English paper was to write the conclusion to an SF story. I, anticipating that my college lectures would not be familiar with the SF field, "stole" a Tenn story which itself was a parody of the alien-threatens-Earth theme. I can't remember the original's name, but it had to do with an alien (an Earth person) imprisoned in and escaping from a cage whose bars were solid paper!

I was never challenged on this piece of plagiarism and went on to work as a teacher for thirty-four years.

Geoffrey Hough

Dear Scott:

The November issue, as usual, was excellent, but I have to protest a comment made by Esther Friesner in her Essay. I am a Swedish citizen (mainly due to procrastination since I came to America at the age of ten, in 1968), and there is one abhorrent element of my past that haunts me periodically when mentioned—or worse, served—by well-meaning or cruel acquaintances: *lutefisk*. Imagine my dismay when I read her misguided statement (my apologies for any insult):

"Much of what goes into successful SF humor is the same good stuff that goes into successful mundane humor, except for *lutefisk* jokes."

I'm sorry. I strongly feel that every opportunity should be taken to taunt, deride, jeer, insult, make fun of (isn't a thesaurus a wonderful tool?) this questionably edible concoction. Surely SF and *lutefisk* jokes can go hand in hand, as this is very possibly an alien dish—or an earthy dish designed to thwart an alien invasion?

She accurately observes that "Humor doesn't work if the explanation takes longer than the joke," but mere exposure to the toxic effluvium of this dish should serve as plenty of "set-up," after which one can embark on a half-hour monologue as to its probable origins, uses in interplanetary warfare, or as a negotiating tool with Klingons.

F. Alexander Brejcha

Dear Mr. Edelmann:

"The Androgynous Murders," "Gossamer," and "VR Marsbase 1" really made the November 1995 issue exceptional. All of these stories were well worth the cover price by itself.

I've been a fan of Stephen Baxter's since I first read his prize-winning "Blue Shift" in the 1989 *Writers of the Future* Vol. V, and he certainly didn't disappoint me with "Gossamer." Pete D. Manison's "VR Marsbase 1" was a very sophisticated variation on the simulation-gone-wrong theme and kept me guessing right up to the end.

But my favorite was Kandis Elliot's "The Androgynous Murders," mainly because of its obvious homage to John Varley's 1978 "The Barbie Murders." Agatha Christie mysteries in general, and "The Shadow" — with just the right touch of James Bond. It was very well-executed and immensely entertaining. Thanks for putting together such a great issue.

Vincent Miskell

Readers—please let us know how we're doing at *Letters to the Editor*, Science Fiction Age, P. O. Box 369, Damascus, MD 20872, or E-mail to S.Edelman1@Gevie.Geia.Com.

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## EDITORIAL

By Scott Edelman

# Let our writers know who was the best of 1995.



Drop us a postcard  
and rate the year  
gone by.

**S**INCE OUR PUBLICATION OF MICHAEL BURSTEIN'S letter last issue, requesting that we let you know which of the stories we publish are short stories, novelettes, and novellas, we have received numerous letters seconding that notion. It appears that many of our readers are active in the SF field as fans, and as professional writers and editors, and would like this information to help them cast votes for Hugo and Nebula awards, which require such categorizations. (Of course, since Martha Soukup won the Nebula Award for Best Short Story earlier this year for a story published in *Science Fiction Age*, we already knew that you cared.)

A short story is any piece of fiction up to 7,500 words, a novelette is considered a story over 7,500 words but under 17,500 words, and novellas are those longer works which are greater than 17,500 words but are not as long as a novel. In the past year, we have increased the size of our magazine, allowing us to offer you a greater selection of the longer tales, making the process of sorting the stories more complex. In the interests of helping our readers who take part in such awards events, we offer the following list.

But we don't want to stop there. We don't want you speaking only to awards committees. We also want you to help us make the magazine better by telling us which of our stories were the best of the year. We're at the beginning of our fourth year of publication, a good time to take stock of the year gone by.

Using the list below, go back and refresh your memory as to which story you enjoyed the most in each category.

Then simply write the names of your three favorites—one each for novella, novelette, and short story—on a postcard and send it to me at *Science Fiction Age* Readers' Poll, P. O. Box 360, Damascus, MD 20872. Results will be announced in a future issue.

### NOVELLAS

- "Acts of God" by Ben Bova (May)
- "How Far To The End of the World?" by Gregory Feeley (July)
- "Stolen Faces, Stolen Names" by Ray Aldridge (March)
- "Spondulix" by Paul Di Filippo (September)
- "The Androgynous Murders" by Kandise Elliot (November)

### NOVELETTES

- "After" by Mark W. Tiedemann (July)
- "Forever Down the Ringing Grooves" by Mark Rich (May)
- "The Human Cycle" by David Ira Cleary (May)
- "Reality Shock: In the Entropy Zone" by Jeffrey A. Carver (March)
- "VR Marsbase 1" by Pete D. Manison (November)
- "The Wave" by Scott MacKay (July)

### SHORT STORIES

- "Another Turing Test" by Jeffery D. Kozistra (July)
- "Bioniversity" by Daniel Hood (September)
- "Curse of the Simulacram's Wife" by Bruce Boston (July)
- "Deadly Humour" by Lois Tilton (November)
- "Dread Vengeance" by Lawrence Watt-Evans (January)
- "Elements of Self-Destruction" by Rick Wilber (March)
- "Gossamer" by Stephen Baxter (November)
- "A Grain of Truth" by Deborah Militello (July)
- "The Hero Trap" by Jo Clayton (January)
- "Idiosyncrasies" by Mark Rich (March)
- "Jonathan Livingstone Seussing" by Allen Steele (Jan)
- "Just A Couple of Extinct Aliens Riding Around in a Limo" by Adam-Troy Castro (January)
- "Just A Couple of Space Rogues Playing 'Name The Tune'" by Adam-Troy Castro (November)
- "Kollapse" by Gregory Benford (May)
- "Let Sleep Not Divide Us" by Pete D. Manison (Jan)
- "The Ninth Expiration" by Jo Clayton (May)
- "The Ogre's Wife" by Richard Parks (September)
- "Otto and Toto in the Goer" by Paul Di Filippo (May)
- "To Serve A Prince" by B. W. Clough (November)
- "A Sort of Walking Miracle" by Stephen Dedman (Sept)
- "Spearmint" by Batya Swift Yasgur (November)
- "Striker Out" by Bruce Boston (September)
- "Sweet Bells Jangled" by Martha Soukup (September)
- "Tauronquias" by Ernest Hogan (July)
- "Things Fall Apart" by Daniel Hood (January)
- "Trizurk" by Dana William Paxon (March)
- "Young Man Who Became Weary" by Jessica Amanda Salmonson (March)
- "We Are All Superheroes" by Robert Reed (March)

To encourage reader participation, we will pull three readers' names at random out of the mailing and send them each a selection of recent assorted books and pre-publication galleys. Please respond by February 1, 1996.



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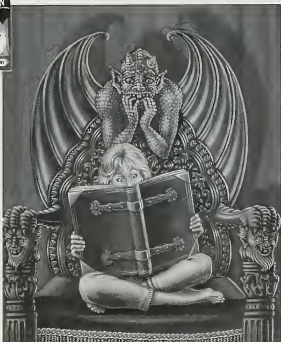


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# ALTERNATIVE MEDIA

## SF Fan, Phone Home

When E.T. wanted to phone home, he had to rely on a bizarre contraption cobbled together out of a broken umbrella and other crumbling household objects. Today's SF fans wishing to phone long distance have more cosmic choices. The phenomenon known as the phone card has paid a visit to our genre,

bringing with it yet another new form of collectible: images of everything from cult television shows such as *The X-Files* to the art of Frank Frazetta are starting to adorn these pocket-sized containers of long distance phone time, and, now, Jim Steranko, who has illustrated more of the classic fiction characters than any other artist, has joined the game. His new set of six phone cards, each of which contains twenty minutes of calling time to anywhere in the United States, is available for a suggested retail price of \$60. The cards, from Celestial Communication, will be soon available in college bookstores and comic book shops. "I never thought of myself as an artist or a writer, but primarily as an entertainer," Steranko has said. Let your fingers do the walking as he entertains your eyes and phone bill as well.

**Steranko's warriors take on the phone company.**



## The Eyes Have It

You've seen them everywhere. In card shops. On the back of this magazine. You've even seen *Seinfeld's* George Costanza get so dazed from staring at one that he wandered shirtless

into a cocktail party and lost his girlfriend. We are speaking of course of those blurry optical illusions that, when stared at in the proper fashion turn jumbles of colors into 3-D images. Now it's SF's turn to use this technique to take art to the next level. Boris Vallejo, one of the most successful artists of the fantastic, has painted book covers for the likes of Larry Niven, Frederik Pohl, and Isaac Asimov. His books and cal-



endars have sold more than one million copies. Now, with the aid of computer graphics designer Gervase Clifton, twenty-six of Boris' finest paintings have been transformed into 3-D illusions. *Boris Vallejo's 3D Magic* (Paper Tiger) has even changed the artist's opinion of computers. "Being a traditional artist, I have resisted the concept of computers for many years," he said, "but now, I see computers as an incredibly useful tool." If you hold this page two feet away and unfocus your eyes while gazing at "Xetax," the robotic image, you'll see a spaceship swooping down on an alien world. Give it time. But please make sure you don't end up like George Costanza.





# Cybersurfing the World Wide Web

The Internet's World Wide Web is rapidly becoming the new frontier for science fiction aficionados, providing an assortment of SF resources that changes so quickly day by day that you'd swear it was alive. Authors, publishers, fans, archivists, booksellers, and gamers of every stripe have created home pages on the web. You can surf for hours,

## Web World

just by clicking your mouse on embedded "links," usually displayed by your browser as underlined words. Here are some URLs, or addresses, to start with:

<http://www.yahoo.com>

A wonderful collection of links to all sorts of interesting sites on the World Wide Web. Add it to your hotlist of favorite places right away.

<http://www.greyware.com/sff>

Links to a wide variety of author home pages, as well as the home page of the Science Fiction and Fantasy Writers of Amer-



ica (SFFWA), which itself is loaded with resources.

<http://www.greyware.com/bfob/default.htm>

Looking for autographed or out-of-print books? Here's a listing of authors who've stocked up on their own books and will sell to you direct.

<http://www.tor.com>

Tor Books hosts just one of the many publisher home pages, thoughtfully including links to a host of other SF publishers and resources, as well as sample

chapters from a variety of recent and/or forthcoming books.

<http://www.greyware.com/authors/melisa/>

Here's a home page for Melisa C. Michaels, full of interesting graphics, as well as some complete short stories and poems, by the person who also designed the SFFWA home page.

<http://www.scifi.com/> Check out the

Sci-Fi Channel, the SF cable channel that struts its stuff on the Web.

[http://www.mca.com/Universal\\_pictures/apollo13/](http://www.mca.com/Universal_pictures/apollo13/)

Movie fans will enjoy this *Apollo 13* page, that includes some online commentary by director Ron Howard. Enjoy the surf!

—Jeffrey A. Carver

## Models From A Master

If the smell of airplane glue sends you into fits of nostalgia, carrying you back to the days when you put together plastic kits of those Universal monsters that used to scare you to death, then you'll want to see one of the best examples of how far the model industry has grown. Ray Harryhausen, one of the spiritual fathers of movie special effects, created classic creatures for such seminal SF films as *Earth Vs. the Flying Saucers* and *20,000,000 Miles to Earth*, bringing them to life with then state-of-the-art stop-motion effects. Monsters in Motion has begun manufacturing limited edition exquisitely sculpted resin kits based on Harryhausen's most popular film creatures. Their latest offering comes from Harryhausen's own favorite production, *Jason and the Argonauts*. In that film, the Hydra was the protector of the Golden Fleece, but even on your desktop, it will be imposing. Sculpted by Joe Laudati, the seven-headed model will be 10 inches tall, with a 24-inch-long tail when fully assembled. Illustrated instructions are included, for this Hydra may prove as much of a challenge for you as was the movie's version to Jason and his Argonauts — but the end results will be worth it.



Hydra will keep common pen pilferers away from your desk.

# SF Symphonies

"Science fiction shows are more interesting, unusual, and intelligent," says ex-Tangerine Dream band member Christopher Franke. "Science fiction shows are for exploring lifestyles with the future in mind, so they are more progressive." It's a good thing he feels that way about our genre, for



after being a part of Tangerine Dream with hit albums such as *Phaedra* and *Rubicon*, he has bonded with SF with a vengeance. After warming up with the soundtracks for *Universal Soldier* and *Stephen King's Tommy*, Kuchers, he is now the musical guru behind the soundtrack for the cult TV show *Babylon 5*, recently collected as the *Babylon 5 Soundtrack* (Sonic Images). And the demanding

creator/executive producer of the show, J. Michael Straczynski, never an easy man to please as he seeks perfection for his dream, is very pleased by Franke: "The composer's task is not a simple one: to work around the dialogue without stepping on it; to be invisible against the drama while at the same time grabbing you by the lapels, throwing you up against a wall and blowing the doors off your house.... Never have I worked with a composer who so thoroughly



Franke adds grandeur to J. Michael Straczynski's Babylonian dream.

understood what was in my head before I could even describe it." Recorded with the help of the Berlin Symphonic

Film Orchestra, Franke's compositions perfectly capture in music the majestic sense of wonder that is SF.

## Ted McKeever: SF's Missing Link

"I lean toward the SF vein," says comics book artist and writer Ted McKeever. "SF is a descriptive, imaginary, visual medium. But there are two different types of SF—paperback fiction, and also movies or theatre, like *Blade Runner*. Comics is the missing link between the two media." And McKeever is himself a link between words and picture. After

the strain of creating the cult classic comic *Metropolis*, McKeever stopped working solo and started producing books such as *Doom Patrol* as part of a team for DC Comics. After too long an absence, he has returned to map out the bleak world of *Industrial Gothic*. In his five issue miniseries for DC Comics' Vertigo line, Pencil and Nickel, a pair of lovers, attempt to escape from the state prison where tomorrow's genetically perfect people store all their misfits. But there is always hope, even in a world of rigidly



enforced aesthetic fascism. The series is narrated by Pencil in his journal, in which he writes upon his first glimpse of life outside of prison, "I felt suffocated by the infinite umbrella of stars and sky," a definite SF-nal attitude toward the cosmos. McKeever's view of SF tends toward the polemical. "I write stories about where we're at, and then extend it. *Road Warrior* or *Soylent Green* is the SF I lean to. It's not far away basically. SF is taking where we're at now and moving it into the future. I like to go to places that seem to be a natural progression of where we're at." And now that he's back, fans of both comic books and SF will be eager to follow his unique vision to those very unique places.

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### Books

fakebook *Cyberpunk Handbook* (Random House). Cross Ms. Manners with black leather and you get this guide on how to keep your attitudinal compass set directly on level. Learn which writers have the right stuff (in addition to Gibson, don't forget Bruce Sterling, John Brunner, or Vernor Vinge), what foods will get you properly wired (Jolt cola and ramen) and the top ten ways to tell whether you or someone you know is a cyberpunk (for instance, your cable box now gets 850 channels free, plus pirate TV from Belize and San Quentin). As part of the *Mondo 2000* crew, the trio of authors comes with the correct credentials, so download their cues for the clueless, pay attention to their "Hipness Checklist," and you too may soon turn from "cyberyp" to true cyberpunk.

## IT'S MILLER TIME

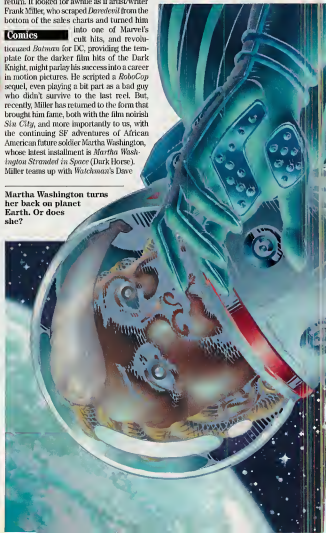
There's something magical to be said for comic books if one of its most talented creators, having left the graphic genre briefly to dabble in films, still finds that there's enough that can be said with word balloons and panels to return. It looked for awhile as if artist/writer Frank Miller, who scraped *Daredevil* from the bottom of the sales charts and turned him

### Comics

into one of Marvel's cult hits, and revolutionized *Batman* for DC, providing the template for the darker film hits of the Dark Knight, might parlay his success into a career in motion pictures. He scripted a *RoboCop* sequel, even playing a bit part as a bad guy who didn't survive to the last reel. But, recently, Miller has returned to the form that brought him fame, both with the film noirish *Sin City*, and more importantly to us, with the continuing SF adventures of African American future soldier Martha Washington, whose latest installment is *Martha Washington Stranded in Space* (Dark Horse). Miller teams up with Wachowski's *Dave*

Martha Washington turns her back on planet Earth. Or does she?

Gibbons to tell of a world where civil war threatens to destroy America. In such a world, will Washington abandon Earth for a perfect world in another galaxy? Miller hasn't abandoned either comics or SF, so perhaps that's our first hint at an answer.



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## Without villains, there can be no heroes, so *Blindfold* brings us one of SF's nastiest rogues.



Kevin J. Anderson sets aside *Star Wars* and returns to his roots. Cover art by Stephen Youll.

IN ONE OF THE COVER BLURBS FOR *BLINDFOLD* (Warner Aspect, paperback, 384 pages, \$5.99), Kevin J. Anderson is referred to as the "heir apparent of Arthur C. Clarke." The comparison is certainly not the author's fault, but I have to say there's little of the sense of Clarke's work in this particular book, if only in terms of scope. Anderson's not talking about the transmutation of the human race or galactic destiny here; his focus is something much more personal — surviving and prospering in an ultimately hostile world.

The colony world Atlas has been settled by successive waves of immigrants. The first and then second colony ships found Atlas to be not quite the paradise they'd envisioned. The planet is barely livable, and requires constant effort to keep its imported ecosystem going. Another colony ship brought a group of religious fanatics, the Filgrims, who have never been integrated properly into Atlas society. There was even an attempted invasion by military forces from an increasingly repressive and authoritarian Earth. By now the settlers are hanging on by their fingernails. They retain a fair bit of the old Earth technology, but the main thing keeping the colony going is old-fashioned muscle. Laborers are constantly needed for terraforming, agriculture, mining, you name it. Life is hard, but new blood and newer technology just might tip the balance. When word of another colony ship's impending arrival gets out, this news is greeted with great anticipation by the general population and ruling landholders alike.

Franz Dokken, however, has a special reason to antic-

ipate the new settlers' arrival. One of the original three captains of the first colony ship, he is the last survivor of the first crew that arrived on Atlas some two hundred and thirty-something years earlier. He's secretly using a salvaged "coldsleep" hibernation chamber to extend his life span far past that normally available from conventional geriatric treatments. Having such an extended life span tends to give one the long view, and Franz's particular view is that he should eventually rule Atlas. His grasp for power feeds his love of scheming. He's at once totally self-absorbed and yet enough of a student of human nature to be a first class manipulator. As a clue to his character, it should be enough to note that one of Franz Dokken's favorite pastimes is to curl up in some quiet spot with the works of Machiavelli. The arrival of the new colony ship promises to destabilize the current situation on Atlas in ways that he may not be able to anticipate. Dokken's best course seems to be to complete his plan before the new ship arrives.

If I spend an inordinate amount of time on Franz Dokken instead of the book's putative heroes, that's only natural — so does Anderson. Especially at first, all the other players in this drama are ciphers by comparison.

Kalliana is a good example. She's a Truthsayer, a colcoist who has been raised from an embryo to tolerate and thus make use of the *veritas* drug, a mind-enhancing byproduct of native Atlas bacteria. The Truthsayers can read minds, and their function is that of judge and law court all rolled into one. Despite this power and responsibility, when we first meet Kalliana she hasn't much more depth than your average mall-rat. She's content with her pampered existence, wanting no more than to indulge her passion for sweets and discharge her relatively straightforward duties when needed. She cannot really be blamed for that, having known no other existence, but it doesn't make her very interesting.

Then there's Troy Boren. He's the young son of a poor family from the mining district. His relatives have invested heavily in securing him a clerk's position at the docking point of the cargo pod that ferries *veritas* and replicated Earth organisms back and forth from the original colony landing site to the remaining orbital manufacturing/genetic facilities. Troy means well, but his penchant for idle dreaming gives him a mental stumble that tends to undo whatever good he hopes to accomplish, either for himself or his family.

A typical lapse leads Troy to inventory incorrectly a shipment from the orbital platform. When he sneaks back into the building late that night in an attempt to rectify his error, he accidentally bumps into the fruition of one of Franz Dokken's many schemes. When he's caught by the soldier-police (sol-pols) standing over the body of a man murdered by Dokken's henchman, Troy is accused of the murder and hauled before the Truthsayer Kalliana.

Atlas society has become dependent on the Truthsayer's Guild; their ability to determine beyond question the innocence or guilt of accused criminals via telepathy, plus their

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skill at mediation, has helped maintain social order for many years. Truthsayers are considered infallible, but when Troy comes before Kalliana, she pronounces him guilty. She's done the unthinkable for a Truthsayer: Kalliana has made a mistake. Or to be more precise, justice now truly is blind on Adas — the Truthsayers are losing their powers.

It's not giving away too much to say that Dokken is ultimately behind this turn of events, because very early in the book Anderson makes it clear that Dokken is behind almost everything. The full extent of his plans is gradually revealed while Troy and Kalliana's world unravels to the point where they almost lose everything, including their lives. It's only then that Troy becomes an active player in his own life, and Kalliana is forced to extend her experience beyond the confines of the Truthsayers' headquarters.

The characters allied against Dokken do finally show some growth and individuality, for which I was grateful. I do wish this maturing had started a little earlier; Dokken has center stage for so long it's hard to imagine what could possibly counter him. You might even begin to wonder if he *should* be countered, for lack of a positive alternative. Troy and Kalliana at first are just trying to survive. Even the master of the Truthsayers' Guild, Tharion, at first is more Dokken's pawn than almost anyone. That soon changes.

Anderson leaves himself room for a sequel, and the reader is equally free to imagine

either of two possible conclusions to the book. That was a clever touch that should have felt like a cheat but instead seemed oddly appropriate. Perhaps even desirable. A long-time television actor known for playing villains was once asked if he minded being typecast, to which he replied, more or less, "Not at all. The villain usually has the choicest role." In *Bloodfold*, that philosophy certainly applies.

Richard Parks

**The Memory Cathedral: A Secret History of Leonardo da Vinci**, by Jack Dann, Bantam, 485 pp. \$22.95.

On my personal list of the greatest SF novels of all time (available upon request), Jack Dann's *The Man Who Melted* would be right up there—a beautiful, terrifying *cri de coeur* for humanity and an absolutely unforgettable book. Now, ten years later, Dann has given us *The Memory Cathedral*, another unforgettable novel that lays bare the harsh lineaments of Renaissance Italy and lets us see the bones of our own destructive age within the beauty of that earlier time.

*The Memory Cathedral* is an imagined life of Leonardo da Vinci, the 15th century inventor, artist, and all-around Smart Guy who in his Florentine studio managed to anticipate any number of major technological advances, including armed tanks, airships, helicopters and ultralight aircraft. Indeed, if da Vinci had concentrated on fixed-wing gliders, instead

of the ornithopters he was obsessed with, he might have mastered flight centuries before the Wright Brothers.

And therein lies the "imaginary" portion of Dann's history: he posits a Leonardo whose inventions actually *work*. But readers hoping for scenes of magical flying machines and alchemical transformation will be disappointed. Dann's work is both more subtle and more demanding than that. Instead of going for the easy miracles of standard speculative fiction, he shows us the moral crisis of one of the greatest minds of all time, and in so doing casts a wary gaze upon our own dark century's dubious achievements.

We first encounter Leonardo as he sits, near death, feeding the pages of his notebooks to the flames and wandering through the corridors of the memory cathedral of the title—a mnemonic device that allows for some melancholy cross-cutting as the tale progresses. But after this brief elegiac scene, the reader is thrust into the life of the young Leonardo, and all the gorgeous splendor and feverish intrigue that is Florence under the de' Medicis. This Leonardo is not a somber, driven artist striving to capture the golden afternoon light on canvas; he's more intent on seducing seventeen-year-old Ginevra while her father is upstairs in his master's *bottega*. Alas! Her bankrupt father, in time-honored fashion, has promised her to Niccolini, a fat, old, and very wealthy merchant; to protect the family honor Ginevra weds him, despite her love for

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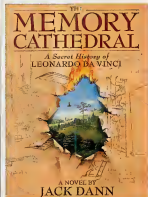
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Leonardo. Dann pulls taut these simple threads and from them weaves the elaborate tapestry in which Leonardo's subsequent downfall and triumph are intertwined.

The first half of *The Memory Cathedral*, set in Florence and its environs, is absolutely irresistible—court and ecclesiastical intrigue, papist ritual, satanic orgies, forbidden love. Leonardo's charmed circle of friends and colleagues reads like the index of a Renaissance history textbook: Botticelli, Columbus, Machiavelli, de' Medici, Vespucci. It's difficult to avoid the perils of this sort of history-as-entertainment—Lawrence Olivier as Caligula!



Cindy Crawford as Marie Curie!—yet Dann does so, deftly. His novel never becomes a set-piece for walk-ons by the immortals who populate it, a Merchant Ivory production in tights and silken gowns. His characters are too richly drawn, from the tormented Leonardo to the saintly Botticelli and Simonetta Vespucci, Botticelli's brilliant, ethereal mistress and model. And while the earlier, Florentine portion of *The Memory Cathedral* is painted in gorgeous *quattrocento* colors, there are terrifying creatures crouching in the shadows: plague, mob justice, consumption, betrayal. Each of Leonardo's triumphs seems to hold within it the seed of its own destruction, just as his notebooks might have been compiled only to be given to the flames. A portrait languishes uncompleted; a love affair withers; a flying machine falls to earth. Finally, an assassination in the cathedral of Santa Maria del Fiore sparks a riot that lays waste to the city, and destroys that which Leonardo loves most. In the configuration's aftermath his notebooks become filled with horrific images, studies for intricate machineries of death that would seem the issue of a deranged mind, were it not that they prefigure weaponry that have in the 20th century become commonplace. Betrayed and heartbroken, his reputation sullied by public accusations of sodomy, Leonardo flees Italy for the Orient, and *The Memory Cathedral* ventures into terra incognita.

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My own knowledge of Renaissance Italy is pretty much bounded by some college courses taken several millennia ago. So I can't vouch for the veracity of Dunn's vision of Florence, but I can say that it feels marvelously right: it is difficult now to look at Botticelli's *Birth of Venus* and not see poor doomed Simonetta enthroned within the waves. Dark as these chapters are, the latter part of *The Memory Cathedral*, is far more bleak.

Elizabeth Hand

**An Exaltation of Larks**, by Robert Reed, Tor Books, hardcover, 251 pages, \$21.95.

In the complicated ecology of science fiction writing and publishing, we can discern a partial resemblance to life in the sea. At the top of the food chain live big, glamorous, well-publicized creatures like sharks and whales. Many smaller, less exotic fish populate their own secure niches in the middle of the chain. Crawling on the ocean bed are bottom-feeders, scavengers which subsist on the droppings and leftovers of the others.

But such an analogy soon breaks down. What fills the roles of plankton on which all sea life ultimately rests? And bottom-feeding should really imply work of a derivative,

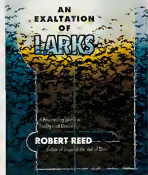
degraded nature (the kind of work which, unfortunately, frequently ends up on the best-seller list). Maybe we should switch lenses.

In the SF field, our attention is easily drawn at first to the romantically depicted lone scouts, brave writers who blaze new territory, light up new vistas. (They are frequently recognizable, as the joke goes, by the arrows studding their dead bodies.) Following the scouts are the pioneers, the settlers. A hardy bunch on their own terms, they are more interested in setting up houses, farms, and villages on land already explored; raising fumes; living an unadventurous, stable life. Finally, after everything is safe and a market exists, the carpetbaggers arrive, peddling cheap and meretricious goods at high prices.

Robert Reed, whose newest book is *An Exaltation of Larks*, is a settler. Like Lloyd Biggle, or Keith Laumer before him, Reed hones and incrementally refines the hardcore tropes and conceits of the field (although in Reed's case, he employs a much more sophisticated palette and keener eye than Laumer or Biggle), while delivering thrilling, even thoughtful entertainment. Not one to push the genre where it has never gone before, he is nonetheless a solid, talented, honest, reli-

able writer who can fully utilize the discoveries of others in ways uniquely his own. Through six previous novels and innumerable stories, all of which show the courage to tackle different themes and occupy different venues wholeheartedly, Reed has exhibited a mature sense of just what modern SF can do.

And it is ultimately through writers such as Reed that the SF field flourishes, for an endless succession of Natty Bumpo loners, while invigorating, is no solid foundation on



## BOOKS TO WATCH FOR

**The Golden Nineties**, by Lisa Mason (Bantam Spectra). Her first novel took us back to the '90s, but her latest effort lurks us even further into the past, as a 25th century scientist heads to 1896 to search for a slave girl whose life has far-reaching consequences.

**The Gas**, by Charles Platt (Loonquasies Unlimited). The notorious story of the release of a toxic gas that destroys all inhibitions is subtitled "A Novel of Sex and Violence." Whether obscene or just bad taste, this is the adult SF novel that refused to die.

**Spectrum II: The Best in Contemporary Fantastic Art**, edited by Cathy Burnett and Arnie Fenner (Penguin/Puente). The editors searched books, magazines, trading cards, advertising, comics, and anywhere SF or fantasy illustration can be found to bring you the finest.

**The Castle of Indolence: Poetry and Its Pretenders**, by Thomas M. Disch (St. Martin's Press). His range is vast, with one foot in SF, fantasy, and horror and the other as a respected poet and critic. His courageous prose skewers the frivolous and challenges us all.

**The Essential Star Wars Character Guide**, by Andy Mangels (Ballantine del Rey). With George Lucas' complete cosmic trilogy back on the video store shelves, now is the time to make sure you keep track of everything you ever wanted to know about *Star Wars* lore.



**Exodus From the Long Sun**, by Gene Wolfe (Tor). All secrets are at last uncovered and all mysteries revealed as Wolfe presents the long-awaited concluding volume to his generational starship saga. SF's answer to Nabokov continues to deliver a polished sense of wonder.

**The Buchanan Campaign**, by Rick Shockey (Ace). A frequent SF Age contributor sets his new military series in his Second Commonwealth universe. By the 31st century, the Windsor family has moved into space, and Sgt. Spencer must fight for independence.

**High Fantastic: Colorado's Fantasy, Dark Fantasy and Science Fiction**, edited by Steve Rasnic Tem (Ocean View). Writers from the Centennial State strut their stuff with a mix of original and reprint tales by Simmons, Bryant, Webb, Willis, Bishop, and others.

**The Bloody Red Baron**, by Kim Newman (Carroll & Graf). *Amos Detweiler* visited a vampiric Victorian England with Sherlock Holmes and his contemporaries thrown in. Now Newman continues his alternate history in a volume set in WWI and starring Baron von Richtofen.

**Lean Times in Lankhmar**, by Fritz Leiber (White Wolf). No library of the fantastic can be without this second volume in a continuing rediscovery series which brings together two more classic collections of barbarian *Lankhmar* and master thief the Gray Mouser.

which to build. Of the carpetbaggers, we will not lower ourselves to speak.

Our viewpoint protagonist is Jesse Aylesworth, the period and place, mid-'70s America, a time evoked by subtly planted references to such cultural icons as 8-track tapes, President Carter, *The Towering Inferno*.

Jesse, a senior at the small and pedestrian institution known as Warner College and editor of the school paper, is something of a ladies' man, having seduced nearly every nubile female on campus. This at times charming, at times repellent trait will eventually be revealed as a kind of built-in flaw with a truly astonishing origin. Meanwhile, though, the reality of such an attitude, how it shapes Jesse's minute-by-minute perceptions and actions, is beautifully delineated by Reed. In fact, in all matters sexual, including his depiction of some rather randy bouts of intercourse, Reed exhibits an unflinching and poetically graphic attitude toward the erotic that is too infrequently found in SF. And as we shall learn, this emphasis on sex is far from gratuitous, but is rather a deliberate thematic tactic.

One snowy evening, Jesse is thrown together with fellow student Sully Faulkner, one of the few women he has not bedded. From this point on, over only a day or three of actual time, myriad bizarre events begin to accrue, culminating in nothing less than the *Childhood's* Endlike transformation of the entire Earth.

Not to betray too much of the plot, I can reveal only that the Earth of Jesse's time is being benevolently retro-colonized by intelli-

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gences from the end of time: coolly analytical, disembodied "turtles" who stand in opposition to the hot-blooded, sexual "bats" like Jesse. Not only that, but Earth has been colonized over and over, at sequential 15-month intervals over branching timelines, for eons! (Implying, of course, that we should not be too smug here in 1995, since our own turn to experience the terror and mystery which Jesse and his peers undergo lies just ahead.) This core idea, brilliantly explained, represents Reed's major contribution to novelty, although even this reminds us of similar riffs in Paul McAuley's *Eternal Light* (1991) and Greg Bear's *Eon* (1985).

By midnovel, all traces of conventional mortal life have begun to fall aside. In their place, the central characters experience a Boschian set of beacing, liberating transformations which simultaneously encapsulate and liberate their humanity. Providing the narrative tension during this portion of the book is the hunt for a rogue turtle, a non-altruistic cheater bent on ultimate control of the universe. (Think Hal Clement's *Needle* [1959].) Reed provides plenty of clues, both false and true, pointing to the criminal's identity, until the final revelation, which piles disclosure atop disclosure, culminating in a final reversal that upsets the reader's preconceptions in grand, bravura style.

Reed's meticulously spun prose at times reaches the lyrical heights attained by the lamentably lost Roger Zelazny, whom Reed

also resembles in his preference for focusing on the titanic struggles of doomed immortals. And if Reed continues to turn out novels as fine as *Excitation*, he might surprise us all by striking out one day for parts unknown.

Paul Di Filippo

## RECENT AND RECOMMENDED

Isaac Asimov continues proving himself to be SF's most loved author, even though he is sadly no longer with us. He has just won his second posthumous Hugo, for the final volume of his autobiography, *I, Asimov*, following up on his win for *Gold: Reading Years, Isaac Asimov: A Lifetime of Letters* (Doubleday, hardcover, 352 pages, \$24.95), edited by Isaac's younger brother Stanley Asimov, one can easily believe that this unusual trend is fated to continue. What fandom loved was Asimov's ebullient personality, his sincerity, and his gosh-darned overwhelming wit, and probably no other SF writer had his personality come through so clearly in his writing. With this volume, even though he is speaking to his many correspondents, there is the unmistakable feeling that he is speaking to you, the reader. Asimov received over 100,000 letters in his professional career, and he answered over 90 percent of them. In editing this book, Stanley Asimov devoted a year of his life to reading each one of them. Included are Asimov's letters to Stephen King, which include this passage on the publication of the book which was to become Asimov's

first national bestseller: "*Foundation's Edge* seems to show promise, but I am careful not to let my hopes get too high. After all, I get a best seller about as often as you don't get one." Upon being asked for his epitaph, Isaac wrote: "It's not dying I mind. It's having to stop writing."

When John Campbell published H. P. Lovecraft in *Astounding*, some readers were outraged. But the old gentleman from Providence, Rhode Island, always had a foot in SF, and shared many of the same sensibilities that we do—an overwhelming mood that there are things grander than mere man, and that good old sense of wonder. Never was the other so alien as when written by Lovecraft. Lovecraft died in 1937, but there is a place for his unique vision today, as is ably proved by *Cthulu 2000* (Arkham House, hardcover, 413 pages, \$24.95), edited by Jim Turner. This volume collects some of the biggest names in horror and SF, each bringing Lovecraft's concepts to both the modern and future world. Lawrence Watt-Evans's "Pickman's Modern" turns one of Lovecraft's most famous tales into a cautionary story about the dangers of the Internet. The late Roger Zelazny's Hugo Award-winning "24 Views of Mt. Fuji, by Holokusai" combines ghosts and artificial intelligence in a melancholy tale that melds horror and SF seamlessly. Other writers in the volume include F. Paul Wilson, Harlan Ellison, Ramsey Campbell, Bruce Sterling, Joanna Russ, and others. The volume is illustrated by Bob Eggleton. □

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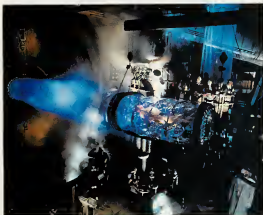
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## MOVIES

By Dan Perez

# Bruce Willis travels through time to star in Terry Gilliam's *12 Monkeys*.



A convicted criminal in his own time, Cole (played by Bruce Willis) is seen here at the start of his journey from a devastated future Earth.

BELOW: Willis and Gilliam on the set.

**T**HE INSPIRATION FOR *12 MONKEYS*, A NEW FILM written by David and Janet Peoples and directed by Terry Gilliam, is *La Jetée* (The Jetty), a little-seen 1962 short from French New Wave filmmaker Chris Marker (born Christian François Bouche-Villeneuve). *La Jetée* is a staple of university film courses and can occasionally be seen in the film programming of science fiction conventions. It's a remarkable film, 28-minutes long and composed almost entirely of shots of still photographs and voice-over narration. In somber black-and-white, it tells the story of a time traveler from a ravaged future, chosen to be a time emissary because of a strange, haunting memory from his distant past. Once in the past, the time traveler discovers the terrifying, ironic significance of that singular memory.

This was the springboard for the Peoples' screenplay for *12 Monkeys*, according to producer Charles Roven. "What they came up with," he says, "was something inspired by *La Jetée*, but is uniquely *12 Monkeys*. They did a spectacular job. The Peoples wrote a script that, because of its time travel aspect and its different worlds aspect, needed someone who could give it a fantastic visual sense. And the perfect director for it was Terry Gilliam."

Gilliam, an alumnus of the famed Monty Python troupe, has carved a niche for himself with a series of films featuring brilliantly conceived visuals and imaginative production design. These cult favorites include *Time Bandits*, *Brazil*, *The Adventures of Baron Munchausen*, and *The Fisher King*. While

Gilliam normally writes or co-writes the films he directs, he was captivated by the Peoples' script for *12 Monkeys*. "It is an intriguing and intelligent script. The story is disconcerting. It deals with time, madness, and a perception of what the world is or isn't. It is a study of madness and dreams, of death and rebirth, set in a world coming apart," Gilliam says.

In *12 Monkeys*, Bruce Willis plays Cole, a reluctant time traveler. The year is 2035 and a holocaust has annihilated 99 percent of the Earth's population. The surface of the planet is uninhabitable, and the survivors subsist in an underground netherworld beneath what was once Philadelphia. Like the time emissary in *La Jetée*, Cole is tortured by a recurring memory from his childhood, a memory of which the significance cannot be fathomed. Cole is chosen to travel to the year 1996 in the hopes that he can help stop the apocalypse before it ravages humankind.

Gilliam, whose first encounter with Willis was during the casting of *The Fisher King*, says he was intrigued when Bruce's name came up for *12 Monkeys*. "The story needed somebody who is strong and dangerous, but also vulnerable. And I remember a scene in the first *Die Hard* where he's picking glass out of his feet while on the phone with his wife. He starts crying as he's talking, and I thought it was such a wonderful scene where a guy could be sensitive and macho at the same time. It's paid off wonderfully. People are going to be astounded by his performance," says Gilliam.

Willis notes, "I was impressed by the really good script. I also wanted to work with Terry, one of our most gifted storytellers. Terry chooses good scripts and is always involved with something very, very intriguing."

Willis continues, "I was intrigued by the notion of exploring what psychosis is. During the film, other people think I'm crazy. For some of the film, I think I'm crazy myself. For most of the film, we dangle the question for the audience: Is the man truly psychotic, or are the events he foretells actually happening? You never know until the end of the film, and it's a nice surprise."

Once in the past, Cole kidnaps Dr. Kathryn Raily, a psychiatrist played by Madeleine Stowe. Stowe says that her character is "not the most balanced human being in the world, and not necessarily good at what she does. She's not as gifted and intelligent as she thinks," Stowe says.

Gilliam says that it was Stowe's "incredible intelligence" that impressed him. Her role, he adds, is "the key, the anchor to the piece. She's just one of the finest actresses out there. She has this incredible ethereal beauty and she's incredibly intelligent. Those two things rest very easily with her, and the film needed those elements because it has to be romantic."

"I get to slobber and rant and rave," Willis notes, "but Madeleine has a difficult part. She has to play this straight-thinking





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doctor, very rational, who guides the audience through the madness."

*12 Monkeys* also features Brad Pitt in the role of Jeffrey Goines, a militant animal activist whose father (played by Christopher Plummer) has engineered a test-tube virus that may prove to be the cause of the deadly holocaust.

"Brad was keen to do the part," Gilliam says of the actor. "It was so unlike anything he'd tried before. He plays a fast-talking, wild, crazed person. I was intrigued with the idea—always like the idea—of casting against type. Brad has taken a leap, a dangerous leap, that's going to amaze people."

Pitt prepared for his role as the disturbed Jeffrey by spending weeks at the psychiatric ward of Temple University's hospital in Philadelphia.

"Brad saw his character as a Charles Manson type," Gilliam says, "and developed the look of Jeffrey based on some of the people he met at Temple. He shaved parts of his head and developed a hypnotic, intense look."

Producer Charles Roven says, "For the role of Jeffrey, we needed somebody magnetic. Someone you were compelled to look at. The role is something very different for Brad; the kind of character we hoped he'd be interested in playing. It adds another dimension to his career."

Christopher Plummer admits that he was drawn toward the role of Dr. Leland Goines by Gilliam's diabolical charm. Plummer



The panel of scientists behind Cole's mission, from left, played by: H. Michael Walls, Bob Adrian, Simon Jones, Carol Florence, Bill Raymond, and Ernest Abuba.

describes the story as "a riveting adventure, diabolically complicated. My part is rather decadent, devious, oily; not an evil son-of-a-bitch, but a sort of unaware freak. It's the sort of part that's nice to play. One where they talk about you for the first two acts, then you come on in the third."

Regarding Plummer's role, Gilliam was quick to point out an irony: "Here we have this great actor who's been in so many amaz-

ing films, done some of the finest work ever, and we end up putting him in a body bag. And he's got to act his way out of a sack. A Shakespearean actor acting in a sack. It reminded me of Robert DeNiro acting with a bag over his head in *Brazil*."

*12 Monkeys* was shot in Philadelphia and Baltimore, whose industrial sprawls appealed to Gilliam's (and the Peoples') sensibilities. "Coming here," Gilliam notes, "especially

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Cole's spacesuit protects him from Earth's deadly surface in the year 2035.

Philadelphia, really intrigued me because architecturally it has this incredible sense of decay—something that failed. I was drawn to shooting there because I've always felt this film was about decay and nostalgia. There's something lost. This was once the first city of the nation and now it has just sunk into some post-industrial malaise."

Gilliam, in his quest to create a "rotting cityscape," worked with Oscar-nominated production designer Jeffrey Beecroft (*Dances with Wolves* and *Stop Making Sense*) and set decorator Crispian Sallis, who worked on *JFK* and *Alien*. All three were conscious of potential comparisons to Gilliam's earlier works. Beecroft notes that, "While the film does have a quality of *Brazil*, Terry wasn't trying to repeat himself. Working with Terry, you compete with everything else he's done. That's the hard thing, as Terry doesn't want to repeat himself. *Brade Knower* had a won-

derfully unique look, but we didn't want to copy it. We also didn't want to do *Brazil*, nor 2001. Basically we decided to create our own visual language out of any 1920s and '30s architecture we could find."

For the film's time travel devices, Philadelphia's P.E.C.O. Richmond and Delaware electrical plant provided outdated turbines and 18-foot-tall steel condensers. Gilliam says, "I was fascinated by these condensers because they were 18 feet in diameter with this hole in the middle of them. If Cole's going to be sent back in time, it's like a rebirth each time he goes back. The film is very much about birth and rebirth. He would be forced into this tube like a birth canal. I also liked this idea of an amniotic sac that a naked Cole would be put in."

"Because this tube was [according to the Peoples' script] supposed to be reminiscent of an MRI or CAT scan machine, I kept looking at the condenser and saying, 'that's the animal.' So we just decided to take this huge thing and turn it into the world's biggest time machine. We added this blue Xenon light inside the tube, and the effect was extraordinary, just unbelievably magical."

Other sets and props designed for the film include a 500-lb. "video ball," a spacesuit Cole wears on a trip to the contaminated surface of Earth, a mazelike asylum, a futuristic prison, and a decontamination station.

*12 Monkeys* promises to be a film every bit as visually stunning as Gilliam's previous works, with a storyline as challenging as any he has done. "I'm not drawn to straightforward stories," says Gilliam, "but to more complex ones. This film is a tragedy in a strange way, but also a love story, and it deals with death and resurrection. It's a hard film to describe; it doesn't fit neatly into a bag. It's not high concept. It's not your typical Hollywood film, and will demand something of the audience." □

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## In a cosmic paradox, the stars may be older than the universe itself.



In the beginning, the universe was created. But how long ago was "in the beginning"? Art by Bob Eggleton.

**A**S THE HUMAN RACE HAS AGED, SO HAS ITS view of the age of the universe. Specialists and layfolk alike have been debating the age of our cosmos for as long as we have inhabited it, but the answers have been little more than theories until the modern scientific era. In order to shed some light on this progress of discovery and the recent paradoxes that have been uncovered about the universe's age, we brought together two working scientists who also happen to be working SF writers.

Yoji Kondo, an astrophysicist, is director of the geosynchronous satellite observatory IUE. Last year, he co-organized and co-chaired the International Astronomical Union Symposium on "Examining the Big Bang" in The Hague. Under the pseudonym of Eric Kotani, he has written five SF books, four with John Maddox Roberts and one with Roger MacBride Allen. Geoffrey A. Landis works for Sverdrup Technology at the NASA Lewis Research Center and was named by *Ad Astra* magazine as a "cutting edge" theorist in their special issue on the hundred "stars" of space. As an SF writer, Geoffrey Landis has won a Hugo Award for "A Walk in the Sun" and a Nebula Award for "Ripples in the Dirac Sea."

**LANDIS:** Until the astronomer Edwin Hubble discovered the cosmological Red Shift in 1929, most people believed that the universe really had been around forever. Nobody ever had thought that space and time could have a beginning, that there could be a time before which there was no such thing as time. So it is really relatively recently

that the idea that the universe even *has* an age has come into existence. We now believe that the age of the universe, as measured by recent observations by the Hubble Space Telescope, is about ten billion years old. But that measurement also is a relatively recent measurement and somewhat controversial.

**KONDO:** Well, I think people have speculated about the age of the universe in theology, religion and such, for a long time. Geoffrey is correct, scientifically speaking, that we started guessing the age of the universe after the discovery by Hubble. Now depending on what religion you adhere to, you have billions and zillions of years in some South-Eastern religions, to some religions out there that don't seem to care very much. At least one priest computed the exact age of the universe to the year or the day or even to the hour. Now in regard to the physical age of the universe, I think the correct way to ask that question perhaps would be, "Was there a beginning in the universe?" If the answer is "Yes," then "When did it begin?" Because if you don't ask both questions, you are committing yourself to the assumption that there was a beginning to the universe. As it is, the currently dominant theory has the universe beginning with the Big Bang. On the other hand, there are still competing cosmological ideas for the universe, including Fred Hoyle and Jayant Narlikar's Quasi Steady State model, which they announced last year at The Hague meeting of the International Astronomical Union. So, the question should then be, if in fact there was a beginning, and if the Red Shift means what most people think it does, "When did it begin?"

**LANDIS:** What's so really surprising, one might even say mind-boggling, about the Big Bang cosmology, is that before the beginning of the universe, there was no such thing as "time" at all. Time began at the Big Bang, and there really isn't any meaning to the question "What happened before the beginning of the universe?" There was no before the beginning of the universe.

**KONDO:** Well, the first variation of the Big Bang model was the idea of the cosmic fireball advanced by Georges Lemaitre, a Belgian priest, I believe. He did not address the issue of how the fireball came into being. You start off with this exploding and rapidly expanding fireball. The name Big Bang was actually given in jest to the proposal by George Gamow and his colleagues by Fred Hoyle, who was advancing a competing idea, the Steady State universe. The name Big Bang somehow stuck. According to the most recent model, at the Big Bang, you start off with nothingness, literally. The age for that model varies depending on how rapidly the universe is expanding, which is measured in terms of what's known as the Hubble Parameter. Oh, some people call it the Hubble Constant, but it keeps changing. As our observing techniques change and advance, the value changes. We started off with an age, I believe, of only a few billion years in the beginning, but now we are arguing if it should be seven, eight, nine, fifteen, or even twenty billion years.

**SF AGE:** As those numbers have changed, the way in

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which we have been perceiving these things, and the tools and techniques we've invented to measure have changed. What have we learned at each historical step as we've discovered new ways to measure?

**LANDIS:** The most recent measurement is 9.5 billion years as the age of the universe. I should mention, for those who don't realize it, what Edwin Hubble discovered was his second great discovery. The first great discovery he made, in 1924, was that the galaxy that we live in—the Milky Way—is not the only galaxy. He discovered that there are hundreds of billions of other galaxies like ours through the universe, that we live in a very tiny corner of the universe, and that the universe is almost unimaginably huge. And if it wasn't enough to discover that the universe was billions of times larger than anybody ever thought, he discovered that as you look farther away from the Earth, the very distant galaxies are rushing away from the Earth at a fraction of the speed of light. They're rushing away very quickly. And the farther back in time you look, that is, the farther away you look, the faster these galaxies are rushing away from us. And this is a phenomenon known as the Red Shift. What you can then instantly say is, if everything is rushing away from everything else, if you look backward in time, at one point they must have been all together. So at one point the universe was one unimaginably dense and incredibly tiny point, and that is what we call the Big Bang that the universe expanded from—an infinitesimal point, at some exact instant in time. That, of course, is Hubble's great contribution to astronomy, the discovery that the universe did have a beginning. Once you understand that, the controversy over exactly when the beginning was is really a small issue compared to the huge philosophical point that there was a beginning.

**KONDO:** That's one interpretation, but there are several others. The obvious one I should mention first is the Steady State or Quasi-Steady State. The universe has the property of expanding forever. It retains the same density, because there is a perpetual creation of matter in a vacuum. In fact, Fred Hoyle was laughed at by some of his colleagues in the '60s, because he was advocating that hydrogen atoms could be created out of a vacuum. Now, according to the inflationary Big Bang model, you start off with vacuum—nothingness—and then you expand fast. You did not create just one atom out of the vacuum—you created the whole universe. Fred Hoyle now says that had he named his model "mini-inflation" it might have been accepted more easily. So, there is this one alternate model in which the universe has the property of expanding forever, but the creation of matter is taking place always, so as to fill the space in between in this forever-expanding cosmos. One hypothesis posited to explain the red shift is that photons get tired traveling distances, and wavelength shifts occur. In consequence,



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photons arriving from distant galaxies are red-shifted.

**SF AGE:** So how do we make a determination of possibility among the competing theories? Which one is giving us more accuracy?

**KONDO:** By continuously making accurate and better observations, eliminating assumptions or identifying assumptions clearly so that we know which assumptions are tenable for this or that. For instance, in order to measure the rate of recession in the Big Bang model, you have to know the distances to the objects that are receding.



Soon we'll be able answer questions like: "How fast is the universe expanding?"

**LANDIS:** And it's sometimes very difficult to find out how far away something is when it's a billion light-years away.

**KONDO:** Yes, indeed. There are several ways for doing this. The way by which Hubble started was very clever. He wed two types of variable stars. One is called an RR Lyrae variable. The other is known as a Cepheid variable, because the prototype of that class of stars was Delta Cephei. The RR Lyrae variable prototype was RR Lyrae. Anyway, those stars have variabilities that are in accordance with the absolute brightness of the star. So, if you know the period of the variability—

**LANDIS:** These are stars that get brighter and then dimmer and then brighter and then dimmer, regularly.

**KONDO:** Brightness changes so that if you know the periods, say three days or four days, you know their absolute brightnesses. Therefore, if you measure its apparent brightness, you can determine the distance to it. That's the idea. But, there are at least two classes of Cepheid variables.

**LANDIS:** That's the mistake that Hubble made at the very beginning, and why he came up originally with the wrong number. There turns out to be two different types of Cepheid variables, and the very bright ones that you can see millions of light-years away are different than the ones that you can see most easily in our galaxy. That was Hubble's mistake.

**SF AGE:** Maybe you can explain to us laypersons the apparent paradox that exists, in which based on the most recent measurements the universe is apparently 9.5 billion years old give or take 1.1 billion, and yet the

*Continued on page 98*



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**B**ENEDICT MET CANDICE TWO WEEKS before he was to marry the daughter of the dean of the engineering school. They were instantly crazy about each other: He was drawn to the mixture of whimsy and WASP sentimentality he saw in her heart-shaped face. She, in turn, though she had never thought of dating a Black man before, fell hard in love with the intensity of his amber eyes behind wire-rim glasses, the intellect suggested by his broad bronze-gold forehead.

So they did something stupid. Candice sent a letter, withdrawing from her prestigious East Coast law school, and they eloped to Las Vegas.

Back in Los Angeles, they lolled in Benedict's student housing apartment, enjoying the earthy scent of daisies from Candice's bridal bouquet and ignoring the lumps in his cheap futon.

Candice's brother was one of their few friends and relatives who overcame shocked disapproval enough to send a wedding present; and his gift, Benedict suspected, was something that just happened to be lying around the house. It was a new book about the Burgess Shale fossils. The book speculated about what advanced creatures might have evolved from the small, wonderful life which had gone extinct at the end of the Cambrian period.

"Oooh, cute," said Candice, pointing at the drawing of a thing-that-was-not-an-arthropod. Benedict, though temporarily sated, rolled over on top of her, his cop-py arms contrasting with her pale cream back, and

# A SONG AGAINST THE DARK

Over the eons, the primitive creatures that first roamed our world have evolved into beings far more complex.

But has anything really changed?

BY MARY A. TURZILLO  
*Illustration by Greg Carter*

examined the page. *Opabinia aesthetica*, it said. A segmented creature with five eyes atop its head, an organ like an elephant's trunk, many palps by which it swam, and a claw where its tail should be.

"Cute? No fur, therefore not cute."

"Cute in concept," said Candice. "They probably said cute things to one another."

Benedict snorted, blowing a lock of Candice's hair across her cheek. "That thing was at most three inches long. Its brain was too small to let it say anything."

"Ha. Anthropomorphic bigot, you! Stop tickling me! How do we

Temu? You are leaking ichor and fouling the water so badly I can hardly sing."

"Mother, I think I'm going to be a male!" Temu burst out.

Mother's neck-lobes turned pale and her nozzle retracted. "Never in our family! Oh, Temu, don't try to frighten me."

"But my belly is speckled orange already, and my nozzle is shrinking."

Mother extended her own nozzle tentatively to explore Temu's palps. Then she brought her rear eyes, which were the more color-sensitive ones, close to Temu's belly. Her vibrations faltered. "I thought it was too early for you to change. You've always had a long

***"Temu, child! You were  
always one of my favorites.... The sensuousness  
of your lobes! The grace with which you move  
each body segment."***

know it takes a big brain to be smart? Maybe their brains were very efficient."

Benedict stopped tickling, began stroking. "And dumb enough to go extinct. Turn the page."

She snatched the book back from him. "I like this little guy. Look at his long snout."

"How do you know it's a him? Same way you decided it could talk?"

"Maybe it had a specialized intelligence. Say, it could appreciate great art. Or maybe it thought with an organ that became genitalia when it became mature."

"Like —"

"Like maybe animals can't think great thoughts and mate at the same time. Who would guess you were a bright young computer scientist as you chase me around the apartment like an ape?"

Benedict tossed the book on the floor and licked her left ear. "I am not a bright young computer scientist, I am a brilliant young computer scientist."

"A demented ape," said Candice, wriggling.

"But I receive your meaning. After all, who would guess you're a brilliant law student when you're shrieking, 'More, more, more, more, more!'"

She retaliated by squirming away and biting his instep.

Neither one of them was giving much thought just then to how they were going to reassemble the pieces of their shattered careers.

Instead, the two brilliant young creatures engaged in nonverbal communication for a prolonged time.

EARLY DIMNESS WAS UPON THE SHALLOWS, AND TEMU'S MOTHER WAS teaching her thirty-seven pubescent children the "Lay of Gifnu's Conquest."

It was one of the most prominent Lays of all the ones sacred to Nuyli's Children, and Temu had it almost entirely memorized. Temu was a studious young one, and had often neglected early childhood duties of feeding the males or sweeping trenches for larvae, to float silently and listen as Mother taught the elders.

Temu also loved the fragile sand paintings, so beautiful in early dimness or brightening, just before the current-reversal jumbled the grains of colored sand. Temu longed to make the Great Journey to river-mouth, to see the paintings made of stones, the work of many industrious mothers, the first of Nuyli's Children, long ago.

But Temu's nozzle dropped tonight, frills trembling with more than the current of early dimness.

Mother broke off her song and burst out, "What is wrong with you,

nozzle, now it does seem shorter."

"Mother, I don't want to be male!"

"Hush up. We haven't had a male in the family for generations. We've always had to import a dozen or so for fertility."

"I'm frightened!"

"You're being a silly, Temu. And now I'll have to start the Lay from the beginning. Children, let's start over."

But three darkening later, Mother ended the lessons early, then swam after Temu. She ran her nozzle contemplatively over the young one's belly and gills. Finally, she seized Temu's nozzle and pulled it out to its full length.

Temu's palps trembled with fear. "My nozzle is shrinking, isn't it, Mother? How can I ever learn the Lays and intone them?"

Mother flipped over in the water and began swimming back and forth. "It's worse than that, child. Soon you won't have enough nozzle to grasp a male for copulation."

"And I'll be immobile, like the males. My palps will fuse and I'll be in a little sand-net down-current. I'll never be able to do the dances and pantomimes."

Mother stopped swimming and drifted close to Temu. "Let's go to the Old Mother. She's seen generations of males emerging, and she can examine you and tell for sure what will be."

The Old Mother spent much of her life dreaming, and only at the brightest brightness was she active enough to answer, so Temu and Mother had to undertake their quest the next brightening.

Old Mother was very large, with a beautiful long nozzle like a graceful anelid waving in the current. Temu had seen her only a few times, when she taught the most sacred dances, those which one could learn only from a very old mother, who could preserve their purity.

"Temu, child! You were always one of my favorites, and I've seen thousands just this last year! The undulating beauty of your palps! The sensuousness of your lobes! The grace with which you move each body segment."

"Temu has more body segments than any of my other pubescent children," said Mother proudly. "But I'm afraid the poor child is going male on me. Can you look and tell?"

Temu extended her body to its full length as Old Mother felt each segment. She flipped Temu over and ran rear eyes, front eyes, and center eye in turn over Temu's belly. "Traces of male ichor, I'm afraid," she said. "But let's measure the nozzle to be sure."

Poor Temu's nozzle was shorter by three segments than it had been the previous dimness!

"Well," said Mother philosophically, "I guess we have to have males

in the world. Such a shame. I taught her all those Lays, and she knows the dances and pantomimes best of any of my children."

"Build her a nice nest in your own home," said Old Mother. "I don't hold with folk that farm their males out to other families. Who knows if they're fed right or if the females force them to copulate too frequently or if they have lacerations from nozzle-suction."

"I don't want to be male!" trumpeted Temu through a sadly diminished nozzle.

"All that teaching gone to waste. Poor child will soon be as stupid as a Yohola."

"No!" shrieked Temu. "I'm not getting stupid! I'll never forget the Lays!"

Old Mother patted Temu's terminal claw with her nozzle. "You won't remember a thing, darling. It might happen now, or in a dozen brightenings. One day you're swimming around doing dances and planning sand paintings, the next you don't even know you have a name."

Temu subsided into harsh despair, and leaked ichor bitterly. "All our males have names."

"Ah," said Mother, "but none of them answer to them."

Since Temu was changing, Mother released her from chores. She also tried to chase the child away while she was teaching Lays or dances. What was the use of learning Lays that would be forgotten after the male metamorphosis?

Diumu, Temu's third-but-eldest sister, was callous in her assessment of the situation. "I wouldn't mind being a male. They don't have to work or learn things, and they just lie around and copulate all day."

"I don't want to lose my mind!" said Temu.

"Why not? From what I understand, copulating is lots of fun for the males, and the more they get to do it, the better it feels."

Temu was sexually mature, although she hadn't set eggs yet, and Temu supposed she knew. "Come up to the nests and I'll show you. The males seem to get pleasure out of it, and I know I enjoy it."

"Stop!" said Temu.

But Diumu was undulating from eyes to hind-claw with mirth. "See, what the female does is grasp the male with her nozzle. Then he

only a few more days. Soon will come moments of forgetfulness; these will grow more frequent. Prepare a nest, I say."

"I want to be female," moaned Temu. "I don't care if I'm sick. I want to learn the Lays and teach them to my own young."

"Hush," said Old Mother. "In a dozen darkenings, you won't care about Lays, or even remember them. All you'll be interested in is the feeling of a nozzle behind your rear eyes."

"Please, Old Mother, I don't want to forget the Lays!"

"It is not a bad thing to be male," said the Old Mother piously. "You will father many a fine egg, I'm sure, and live a long life of senseless pleasure."

"With no brain!" Temu turned imploringly to Mother.

Mother dipped her nozzle respectfully. "Old Mother, I love this young one better than many of my other children. Isn't there some hormone we could administer?"

"It is said," Old Mother intoned, "that the venom of the Marrella, injected in the copulatory sac behind the rear claw, can halt the change. But I have never tried this."

"Try it," said Mother.

And Temu breathed a prayer of thanks to Nuylu, the great Mother of all, who had melted the waters.

Old Mother clacked her rear claw, and sent three acolytes streaking away for a Marrella specimen. They returned almost at once, and Old Mother quickly twisted out the venom sac from it.

"Hold the poor child," said Old Mother.

Temu trembled as Mother and two acolytes seized the young one's palps with their nozzles. Excruciating pain lanced Temu as Old Mother plunged the amputated beak of the Marrella belly-ward, but it was nothing as to the agony of the venom infusing Temu's entire body. Temu's midsection went rigid, then limp, too spent with pain even to writhe.

"I didn't know!" moaned Mother. "My poor little one."

"The pain is temporary," said Old Mother, spitting out the empty venom sac and beak. "Take the child home, dig a nest. The venom works over a dimness and a brightness. We can only wait."

Temu tried to make swimming motions, but was paralyzed with

***Diumu, Temu's third-but-eldest sister, was callous.... "I wouldn't mind being a male. They don't have to work or learn things, and they just lie around and copulate all day."***

begins thrashing around. You have to hold tight — oh, I forgot, you won't be the one holding tight, you'll be the one thrashing."

"Stop it!"

"It's fun," Diumu wheedled. "Come up and watch."

Temu heard that hormones could influence the change. She resolved to eat plenty of Yohola larvae, which had a strong female component, and avoid Marrella milk altogether. After two cycles of this feeding, however, Temu's nozzle had shrunk and become too weak to pick up larvae. Then came fits of uncontrollable shivering, when Temu's whole body would crack like a whip, from rear claw to nozzle. Gut distended with undigested larvae and ichor bleeding from between the plates of every segment, Temu felt as if death were approaching.

Mother placed a strong suction on Temu's rear claw and towed her child to the Old Mother. "Temu is very ill," she told Old Mother.

Old Mother examined Temu carefully, running all five eyes over every segment and feeling carefully with her nozzle.

"See these patches of orange?" said Old Mother. "Your child has

shock. The pain had diminished only slightly, causing complete prostration.

DIMNESS CAME, AND BRIGHTNESS. THE CURRENT FLOWED TOWARD THE center and back to the source. Temu's nozzle was too limp for ches of agony, and moments of sleep came fitfully.

At the beginning of the next dimness, Temu heard Mother's strong voice in the distance, intoning the "Lay of Vianna," she who laid the egg of the first male.

"Praise be to Nuylu," said Temu, moving bruised palps. "I am not male yet."

But when Temu's nozzle was measured, it had lost two more segments, and Mother wept. "Your belly is altogether orange!" she cried.

So the pain had been for nothing.

The unfortunate changeling's palps vibrated with anguish. Should one in such a case eat the colored sand, full of toxic minerals? It would make one heavy, helpless to feed or ripple water across the gills. Death would come quickly.

But death would be another darkness, and Temu was not done fighting the dark.

Temu regained strength enough to swim away, determined to learn as much of the culture of Nuyhu's Children as possible before the darkness came.

Somewhat stronger, Temu swam to the Great Mother and curled at the base of her nest. The Great Mother ordinarily did not take on an acolyte before sexual maturity, because its teaching might be lost if the acolyte became male.

Temu listened to the "Lay of Nuyhu," the oldest and most complex Lay of all. Only the most brilliant of the Mothers had learned it, though all listened in joy to its message.

NUYHU, THE FIRST MOTHER, CRIPT ALL BY HERSELF OUT OF THE GREAT Coldness, which was so cold that the waters ceased to move and became like stones. But Nuyhu beat the waters with her beautiful, strong palms, and they smashed together and melted into liquid water. The Lay told how Nuyhu laid a thousand eggs, without a

tures, which had lasted uncounted darkenings. These sculptures were not difficult to memorize individually, but as they told the story of the origin of the Nuyhu's Children, there were many of them, and Temu feared the metamorphosis might be approaching.

Nonetheless, Temu swam upside down over the sculptures, surveying them with sharp fore-eyes and color-sensitive hind-eyes. Each grain of sand was put just so, and these facts were not lost upon Temu.

*I shall gather rocks and make a great sculpture of the story of Nuyhu,* thought Temu, and straight-way began the search for rocks of just the right color.

While gathering rocks, Temu rehearsed cantos of the "Lay of Nuyhu," but more than once was forced to return to the Old Mother and ask the acolytes to reiterate a line. Were the memory lapses beginning?

Temu took the rocks to the shallows where the family's male-nests were.

"What is silly Temu doing?" trumpeted Dienau.

## *Temu felt great weariness as the climax approached. The dance was automatic, a celebration of the antagonism between water and rock, between creation and oblivion.*

Father to make her fertile. This was possible for Nuyhu. She was a Goddess: larger, more powerful, and more beautiful than any of her Children—a different and more terrible being than the Children now can imagine.

Then Emeraldella came. Not the weak Emeraldella of Temu's time, with their puny gill branches and slender tails, but Emeraldella with fearsome grasping claws and whiplike tails to stun and kill.

The Mother Emeraldella challenged Nuyhu to a duel (at that time Emeraldella were almost as intelligent as Children of Nuyhu, and could actually speak).

Nuyhu fought with the Emeraldella Mother for seven brightenings and seven dimnesses, shooting stones from her nozzle and raising the muddy bottom into a froth to foul her gills. On the eighth the two lay dying in the mud. Luckily, Nuyhu's eggs had hatched, and the hatchlings fanned the water over her that she might breathe and fed her nourishing Marrella roe.

But the exertions of the hatchlings exhausted them, too, and Nuyhu rose to find her children all dead. She set about laying a thousand more eggs, and when she had laid them, she saw that Emeraldella hatchlings had come to attack.

With her rear claw and nozzle, she created a great current, which even now flows through the waters, and blew the hatchling Emeraldella away.

Her labor melted every last bit of the waters and she sank to the bottom. She was not made for such warmth, and her strength had been used up. Her thousand hatchlings, grief-stricken, sang her death Lay and made a beautiful nest for her burial.

No one can find that burial-nest, but Nuyhu's Children can point to the nests of the first hatchlings, surrounded by brilliant sand paintings, a house for the oldest and most prized males.

TEMU'S SOUL FILLED WITH RAPTURE TO HEAR THIS LAY. SHE REPEATED it endlessly to herself, visualizing each scene with all five eyes.

And it came to Temu what must be done.

Temu went to the mouth of the current, evading Branchlocaris and ignoring the hisses of sponge-eaters, to survey the great sand sculp-

ture and the Mothers drifted closer to see.

The sculpture was beautiful. Temu had chosen vibrant pinks and coral colors for the breast of Nuyhu, to show her rage at the approach of the Emeraldella. The Emeraldella, in contrast, were shown in black and deep green, like looking through a long depth of water. The thousand hatchlings, each represented by a pebble that Temu had selected to look like a real Child of Nuyhu, lay at the periphery of the picture, as if swimming to Mother Nuyhu's rescue.

Next, Temu began a dance, palms quivering, nozzle undulating, eye-stalks extending and retracting expressively as Temu danced out the final battle between the giant Emeraldella and Mother Nuyhu.

Temu felt great weariness as the climax of the dance approached. And memory began to fail. The dance was automatic, a celebration of the antagonism between water and rock, between Nuyhu's Children and Emeraldella, between creation and oblivion.

The fatigue grew overwhelming, and Temu filtered. What happened next? The death of the Emeraldella? Or the exhaustion of Mother Nuyhu? Temu danced in frenzy, finally flipping over in exhaustion on the sand in front of the sculptures.

And what were the sculptures? Temu remembered them, had a plan for them, great joy and pain in looking at them. A Mother, a great Mother—yes, the first Mother, Nuyhu.

The "Lay of Nuyhu"! Now the singing must begin.

And yet memory was fading fast, and weakness surged up.

The first line—

"Nuyhu came out of dimness, and her being was the beginning of light."

That was it!

Now that Temu had begun to sing, nozzle seemed to know the words without brain having to tell it what to sing.

Temu sang the joy of Nuyhu's singing her huge nozzle to blow out sand and make nests. Pain came to Temu as the story turned to the loss of the first thousand. But then came the second laying.

What were the words?

What was Temu doing?

# pomegranates full and fine

don bassingthwaite



New  
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The  
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Darkness:  
A  
Highsummer  
Nightmare!

THE WORLD OF  
**DARKNESS**



## *Pomegranates Full and Fine*

Written by Don Bassingthwaite  
Dark Fantasy  
Paperback novel  
ISBN 1-56504-889-X  
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*Highsummer Night, the greatest of holidays  
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*Drawn to the Unseelie Court of Toronto to  
help her friend Riley organize the  
Highsummer Party, Tango arrives to  
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*Tango must find Riley, and in the process  
makes a very unlikely ally. She will need  
all the help she can get as Highsummer's  
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*Based on White Wolf Game Studio's World  
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and Fine is the first of a series of novels  
integrating elements from all of the settings  
(Vampire, Werewolf, Mage, Wraith and  
Changelings) into one story. Don  
Bassingthwaite resides in Toronto, Ontario  
Canada.*

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A soft sound came from the audience in front of Temu.

Temu knew this beautiful one! Temu's own mother, singing the next line, prompting!

The words and melody rose up without conscious volition. The second thousand were laid, and the Children of Nuyhu hatched.

Temu stopped, in confusion. Tired, unable to remember what was happening here, why the other Children of Nuyhu were watching, listening, and gently adding their voices in a beautiful sound that made Temu want to sink to the bottom and sleep and die.

Another voice! More beautiful, deeper even than Mother's.

It was the Old Mother, the one who — Temu tried to remember — never left her own nest.

The Old Mother tenderly keened the coming of the Emeraldella, prompting Temu again.

Temu's palps fluttered, raising from the sand, joy infusing every segment. The sadly shortened nozzle vibrated, beautiful despite its shrinking.

The Emeraldella battled Nuyhu (who was Nuyhu?) and the two locked in deadly combat. (Ah, yes, Nuyhu, the first Great Mother!) And the Emeraldella died, leaking ichor in the water.

But Nuyhu sunk, was dying —

Temu forgot, exhausted.

The voices rose all around, reciting the next line.

Oh, yes.

The thousand of the second hatching fanned the water, so that Nuyhu might cool and breathe, and —

And —

Temu sank, weary, nearly unconscious.

The Sisters and all the Mothers, even Temu's own Mother and Old Mother, began to fan the water, and with a last burst, Temu batted every palp and sang of Nuyhu's death and the melting of the waters.

So many came to copulate with Temu, from both his own clan and others, that he fathered more Children of Nuyhu than any other male had ever fathered. And the "Lay of Temu" was the most sacred song of all the waters.

BENEDICT AND CANDICE LAY GLOWING WITH LOVE, AWARE OF THE smell of approaching rain. Then Candice, who was on top now, retrieved the book and smoothed its pages. "They could be intelligent. So much about them was unexpected and different. In addition to all their strange external organs, they could have been thinking creatures."

"Nah," said Benedict. "Nature gives creatures only enough brains to survive and procreate. And I sometimes think the procreation prevents any remaining brainpower."

Maybe he was thinking about how enraged the Dean, whose daughter he'd jilted, was going to be when he found out Benedict was canceling that expensive wedding. And how his smoothed, well-paved career would soon develop potholes. Or maybe he was hoping Candice wouldn't forever resent dropping out of such a prestigious law school.

"But humans do more," Candice said. "We survive, we procreate, but we make art out of it, and we wonder."

Tenderly, absently, Benedict's bronze-gold hand explored the curve of her cream-velvet back. The room was darkening now, the first fat raindrops splattering the sill above the bed. He'd have to get up and shut the window. "Forgive me, Candice. When I was a boy, I thought women lost their brains when they got pregnant."

"That's an odious statement!" She pushed herself from him.

He sighed. "I used to see all those motherpersons on TV, mooring like cows over fabric softener and toilet paper. I figured they'd metamorphosed."

*His palps became tendrils  
to root him to the nest. His eyes reacted only to the  
darkness that might mean an approaching mate.  
He remembered nothing....*

So tired.

Why was it so dark?

Temu wanted —

Heat rose up, passion, desire.

What was dimness?

What was the brightening?

Only lust burned.

Before Temu's consciousness faded entirely into the lascivious stupor of a male, the eldest-but-three sister, Diemu, chanted a new Lay.

It was the "Lay of Temu," who loved the Lays and the sand paintings and the pantomimes and dances so much that she suffered and studied even to the point of mental extinction, Temu who memorized the greatest Lay and pantomimes ever composed by Nuyhu's Children, before metamorphosis.

Temu lost the thread of the new Lay before it was finished and became a male, mindless and sessile, ruled by desire, to be sanctioned by any female's nozzle, a creature of automatic pleasure. His palps became tendrils to root him to the nest. His eyes reacted only to the darkness that might mean an approaching mate. He remembered nothing, his feelings rose and fell with his hope of mating.

His nozzle shriveled entirely, silent forever.

But the Lay was sung every dimness over the nest of Temu. And a sand painting of Temu's deeds was made near his nest.

"Well," said Candice, with asperity, "when I was a girl I thought men's brains all dissolved to nourish their testes when they turned fourteen."

They looked at each other for a long moment, then burst into giggles. Benedict opened the book and again flipped to the drawing in question. "So you think little critters that weren't even quite arthropods could think. Can a shrimp think? How about a cockroach?"

"Perhaps shrimp can see colors we never dreamt of. Maybe cockroaches sing too high for us to hear."

"I doubt it."

"And maybe they were something different from us, or shrimp, or cockroaches. Arthropods or apes, we're all for the dark, love."

"The dark," Benedict shivered with the sudden chill of the rain, and sat up to shut the window. "Death, or —?"

"Not death. Something dark in us. The rage to be together, against all reason."

Rain darkened the sky and beat in gouts against the pane.

"You mustn't be afraid of that dark," Benedict said at last.

"I'm not. No, I'm not. You and I, we have our own music to keep us safe."

"This music?" He kissed her pale wrist.

She shivered, pulled the sheet up. "Maybe that. Maybe something we have to discover. And we'll go toward it, and not be afraid." □



Something deadly is circling Saturn.  
Something that hungers for Earth.

# KRONOS

3.10.2070  
2 3 1 6 7

## PARN INTREPID

CONSCIOUSNESS RETURNS TO KINNARD LIKE AN AERATED BUBBLE rising from the bottom of an aquarium. He stirs within the zombie tank as the last dregs of the biostasis drugs that kept him under are flushed from his bloodstream.

When he finally opens his eyes, it is to the dimness of the hibernation deck. The lights have been turned down low, but the dull blue glow of the status panel above his tank's open lid nonetheless causes him to squint and blink. He takes a deep breath; his lungs are assaulted by antiseptic cold air, making him cough. There is an urge to vomit, even though there is nothing in his stomach to bring up.

"EASY, CAPTAIN...EASY," SAYS A VOICE FROM THE DARKNESS, SOFTLY accented, warm and familiar, the last voice he heard before his eyes closed nine months ago. "Keep shut your eyes, take shallow breaths."

He shuts his eyes. A plastic mask is placed over his nose and mouth. Pure oxygen forces the nausea down, diminishes the pounding in his temples. The voice murmurs something unintelligible to another person, then the mask is lifted away. "Try again," the voice says. "Don't rush so this time. Everything's copac."

Kinnard carefully opens his eyes again. The status panel blurs, then gradually focuses, resolving into an electronic quilt of lines and graphs. Thin plastic tubes filled with blood and phlegm-colored liquid dangle from sacs suspended above his body, leading into

BY ALLEN STEELE

*Illustrations by Michael Dubisch*

major veins in the crooks of his elbows. No strength in his arms, legs, or back; the soles of his feet tingle painfully, his bladder feels ready to explode.

A face comes into the light — narrow and fine-boned, with albino-pale skin tattooed with intricate swirls and wheels resembling a magnified fingerprint. Above dark blue eyes twice the size of his own is a Gaelic cross, his spiked bars running across a hairless forehead and down the bridge of an aquiline nose.

"Peter..." he gasps, his lips and mouth parched and dry.

"A second, then be done." *Intrepid's* doctor nods to his assistant. She steps into the weak light: Anna Webster-Christ, the ship's cargo master, Peter's first-wife. Anna's face is also marked with the Gaelic cross of Christ clan; unlike her husband, whose skull is shaved bald, Anna's blond hair is tied into a long braid that tumbles over her narrow shoulders like a loose rope.

A plastic waste-disposal bag is in her tattooed left hand. Before Kinnard can object, Anna reaches beneath the sheets, her long fingers sliding across his groin in search of the catheter. She carefully secures the bag around his penis. Anna's intent is anything but sexual, but his member involuntarily stiffens at her touch; her pale skin blushes beneath the tattoos, her large blue eyes making brief contact with his. It's an embarrassing moment for both of them.

"Sorry, Marion," she whispers. "Take just a moment."

"Deep breath, hold it," Peter says.

Kinnard obliges, then Anna releases the catheter and his bladder lets go for the first time in nine months. He gasps in agony, almost wishing that they had left him under.

When it is over, Anna takes the bag to the recycling chute. Peter gently pulls the tubes from Kinnard's arms and gives him a soaked sponge to suck on; then, without being asked, he reaches up to a ceiling monitor and switches it to a real-time image from outside the ship.

There, on the screen, is his destination. Kinnard stares for a long time at the immense ringed planet. "Ship?" he finally asks.

"She's fine, Captain." Peter favors him with a rare smile. "A-OK, everything is. All conditions green."

Kinnard nods. He raises his head a little. Eight men and women still sleep in tanks arranged along the walls of the hibernation deck. The captain wonders what strange dreams float through their slow-time minds; he cannot recall his own.

"Good," he says, his vocal cords rasping from disuse. "Thanks for...taking care of me." He pauses and swallows. "Now get...me out of this thing."

3.11.2070  
0610Z

The Pax Astra Royal Navy frigate *Intrepid* falls toward Saturn, inexorably drawn into the planet's gravity well as the vessel continues its long deceleration burn.

Sixty meters in length, *Intrepid* is relatively small for a ship with a maximum range of nine a.u.s. Designed for military missions rather than exploration or trade, few accommodations have been made for passengers and none for freight, other than the two missile pods slung on either side of its forward hull and the mantelike shuttle moored beneath its wasp-waisted midsection. Imagine a half-tier bottle — the payload module — with its spout glued to that of a three-quarter-liter bottle — the engine module — and you essentially have the warship's architecture.

Mounted beneath the forward module is a large round acrobatic shield. Its ceramic tiles, each a different color, have been carefully arranged so that they form the warship's figurehead: an angel with a sword, her wings spread wide as if flying through space.

*Intrepid's* nuclear-pulse main engine has fired continually ever since the ship left the Moon two hundred and seventy-five stan-

dard days ago, its lasers fissioning the deuterium pellets constantly fed into the reactor chamber, causing the uninterrupted string of tiny nuclear explosions which gradually accelerated the ship, at the end of its boost phase, to nearly one-tenth light speed. As *Intrepid* passed through Jupiter's orbit one hundred and sixty-eight days ago, its crew flipped the ship around until its bell-shaped engine nozzle was pointed in the direction of flight. Ever since then, the ship has been applying the brakes as a long prelude to entering Saturnian space.

"Begin MECO at ten, on my mark..."

"Copy that, sir. Ready for MECO."

"Mark. Ten...nine...eight..."

A tattooed hand fingers on a throttle yoke as its companion hovers over a set of toggle switches.



"Seven...six..."

A pair of wide blue eyes framed by a Gaelic cross watches the read-outs on a comp screen. "Guidance positive. On course for transorbital insertion."

"Five...four..."

Another pair of hands flits across a keyboard. Lights flash from red to green. "Main feed valves closed, central tank off-line. Dumping residual core reactants."

"Three...two..."

"Heat regulators on, radiation buffers engaged, main tank pressure nominal. All systems copasectic..."

"One...now, please."

As if choreographed by a stern dance master, hands and AI systems execute a complex fandango that charms the nuclear beast to

buy. A disgruntled tremor runs through the ship as, for the first time in nine months, the white-hot glow in the exhaust bell quickly diminishes to orange, then red, then fades out altogether.

"MECO complete."

"Reactor shut down and safe, Captain."

"All systems on standby, sir."

Kinnard floats upward against the straps confining him to his seat. Little more than six hours have passed since he was brought out of biostasis, just enough time for his body to readjust to even low gravity. Now that *Intrepid* is in free fall, his arms and legs don't ache quite as much. He wants to sigh with relief, but that would be an inappropriate response; his crew might interpret it as a sign of weakness.

He glances at the men and women seated at consoles arranged around the circular command deck. In the company of bioeng-



neered Superiors, a baseline human is a freak, and not vice-versa. His rib cage isn't anorectically compact. His arms aren't long and sinewy; the fingers of his hands don't resemble articulated pencils. His legs aren't double-jointed at the knees and ankles, his toes haven't been expanded to become a second pair of hands. He has no cerebral implants that allow him to interface with computers, and his eyes don't look like dark blue chicken eggs with a second set of translucent lids.

When the Navy assigned him command of the *Intrepid*, Kinnard was informally warned that Superiors — or "googles," as Admiral Counts referred to them when they were alone in his office at River House — harbored a certain disdain for unmodified Primaries — or "apes," as Superiors often refer to baseline humans, under equally private circumstances. Superiors are born and bred for space; the first gene-tailored embryos raised in a secret lab in Mare Tranquillitatis just before the Moon Wars have come of age. For them, the cosmos is not a frontier, but a birthright; their origins as egg and sperm donated by lunar colonists are an embarrassment, not a heritage. Even the Christ clan, which has embraced neo-Mormonism instead of the extropic philosophies of the Superior families which have migrated to the outer system, could act condescending toward their Primary captain; his weaknesses were forgiven, but not easily forgotten.

Kinnard has been captain of this vessel for three years now. He has come to trust his crew, and he believes that they trust him. But their differences are more broad than their similarities, and he never permits himself to forget this fact.

"Very well," Kinnard loosens his seat straps as he rotates to face the bow windows. "Isidore, initiate rollover maneuver, Jon, finalize trajectories for Saturn atmospheric refueling and Titan rendezvous. Cayenne, ship status?"

"All systems nominal, sir. A full report is on your screen." Cayenne Caswell-Christ doesn't stoop to the broken-English ptois most Superiors use when they're not in the presence of Primaries. Even after two voyages with her, Kinnard still doesn't know whether he should be complimented or insulted.

Kinnard calls up the report and pretends to study it, but cannot help looking up as *Intrepid* turns end-over-end until its bow is pointed toward Saturn. Even at the distance of twelve million kilometers, the planet fills the deck's portals. He involuntarily sucks in his breath as the ringed giant glides into view. He has twice been to Mars and — during the short-lived Callisto Station insurrection, which *Intrepid* helped put down — even the Jovian system, yet even Jupiter's vast and terrible beauty pales next to the serene majesty of its cousin. No photo, film, or VR simulation he has ever seen has prepared him for this first glimpse of its intricate rings, nor the dull yellow-orange bands of its cloud patterns.

A hushed silence falls upon the deck as his crew takes in the spectacle. "Kneecs," Isidore Ortega-Christ murmurs, using — as common practice among Superiors — the ancient Greek name for the planet. "Heshe is beautiful, eh?"

Kinnard smiles. Considering Superior stoicism, his first officer's reaction is a small wonder in itself, yet understandable; *Intrepid* is only the second crewed vessel to venture this far into the outer system. His people are among a rare handful to see Saturn through raised eyes, bioenhanced or otherwise....

And no one knows what happened to the first group of visitors. This thought brings Kinnard back to the present. "OK, let's get back to work," he says. "Plenty of time for sightseeing later." He catches Jon's eye and favors him with a wink. "Specially you, nawco. You get the fun part."

For this, he is rewarded with the fleeting grin. Jon Caswell-Christ can't wait for the challenge before him. This is noticed by Cayenne, who lapses into google-speak. "Cut you no tethernow," she warns her first husband. "This ship not built for joyriding boyshit, hey?"

"Ease off the feedback, fem." Jon turns back to his console. "We copy, over."

Kinnard ignores this as he reluctantly unbuckles his harness. "Marie, have you received anything from *Hershel Explorer*?"

"Word nyet, Captain." Slender wires leading from the back of Marie Ortega-Christ's skull drift about her braided black hair as she shakes her head distractedly. Her eyes are unfocused; her brain's MINN (Mnemonic Interfaced Neural Net) is linked with *Intrepid*'s comnet, so her attention is divided between com deck and cyberspace. "Negatory on all channels. Solid telemetry link on Q and A bands, but nada talkback."

Isidore turns to look at his first-wife. "Huygens Station, try microbeam downlink with them, eh?"

"Do that, OK." Her lips move silently as she subvocalizes a message to the outpost on Titan's surface, her long fingers pantomiming keyboard strokes as she opens a microbeam relay to the base.

Kinnard pushes himself out of his seat and, pulling himself along ceiling handrails, moves to the map table. A holographic one-quarter slice of Saturnine space materializes before him. *Intrepid* is a tiny silver spot passing through the orbit of Phoebe, the outermost moon. Eleven million clicks away, past the orbits of Iapetus and Hyperion, is Titan.

Kinnard punches up the course that Jon has laid in. Studying it, he absently smiles, satisfied that the navigator has done his job. *Intrepid* arrived at Saturn with its fuel tanks nearly depleted; this was a necessary sacrifice of constant thrust that approached one-g when the ship began its midcourse deceleration. However, the frigate was specifically designed for refueling by an aerobraking maneuver through the planet's upper atmosphere, during which gaseous helium-three would be scooped from the thin stratospheric layer high above its swirling cloudtops. This raw fuel source was less efficient than deuterium pellets extracted and refined from the moon's regolith, but it was enough to get *Intrepid* back home. Indeed, his crew had safely performed much the same maneuver during the Callisto mission two years before.

Jon has laid in a trajectory that would graze the top of Saturn's atmosphere below its rings. Before *Intrepid* made its refueling run, it would drop off its shuttle, *Excelsior*, near Titan. By the time he and his crew were viewing the rings of Saturn from below, the landing party would be on Titan's icy surface, trying to discover why all contact had been lost with Huygens Base and the *Hershel Explorer*.

This is the single aspect of the operation that makes Kinnard nervous, although he wouldn't dare admit it to any of his crew. He alone is aware of certain aspects of this mission that no one else aboard knows yet... and what little he knows scares the hell out of him.

Marie interrupts his thoughts. "Microbeam with *Hershel*, no can do. Got nothing, see nothing."

Kinnard peers at her through the halo. "No contact at all? Not even with the AI system?"

"Nada, Captain. White noise, all down the line."

Kinnard nods. He was half-expecting this. "Open a channel to Moscowvia PADSS," he says, referring to Pax Astra Deep Space System, located in the Sea of Moscow on the lunar farside. "Use Priority One daybook encryption and have it relayed direct to CHNAVINT at River House."

Jon and Cayenne glance up from their consoles. Communications from the *Intrepid* are normally directed to FLITCOM at Descartes City on the Moon. CHNAVINT is Sir Lucius Robeson, the chief of Naval Intelligence. His office is located in River House, the Pax Astra's seat of government in the LaGrange colony of Clarke County, and it is a well-known fact that his defects power is second only to the prime minister himself. "Inform them of our arrival," Kinnard continues, "that we've received nothing from either the *Hershel* or Huygens Base."

"Going in, then?" This from Isidore, who has silently come up behind him and is now clinging to a ceiling handrail with his toes. "Launch a rescue mission, we do now, eh?"

Kinnard turns to look at his first officer, knowing that this is not a question at all. His clan has piloted the *Intrepid* across eight and a half a.u.s without knowing the full details of their mission; now they learn that their captain is reporting directly to Naval Intelligence. Clearly there is more to this than simply finding out why contact with the Titan expedition was lost ten months ago.

"It's still a rescue mission," Kinnard says, "but there may be more to it than just that."

Isidore stares at him. "And when do we learn more, Captain?"

Kinnard hesitates. As commanding officer, he is within his rights to simply refuse giving an answer. Or he could tell everything he knows, now, and let the chips fall as they may. He takes neither option. "When we receive a message from River House," he replies. "Until then, we proceed with the mission as scheduled."

Kinnard looks past Isidore to the chief engineer. "Cayenne, when you're done there, get *Excalibur* prepped and ready for launch." She silently nods, and Kinnard prods his jaw with his fingertips. "Peter? How are our passengers?"

"Slow coming up, Captain," Peter's voice says in his right ear, "but they're awake."

"Good. Soon as they're able, have them report to the wardroom. I'll meet them there." He gives Isidore a sidelong glance. "You and Anna come, too," he adds. "In fact, I want everyone aboard present for the briefing."

"Copy that, Captain." A pause. "Briefing is when?"

"Soon as we hear from FLTCOM. I'll let you know." He signs off, then looks at Ortega-Christ. "Fair enough, *je/é*?"

"Straight wire, Captain."

"Copa. I'll be in my cabin if you need me."

Isidore gives him a short wave over his shoulder as he somersaults back to his seat. Another PARN commander might consider this insubordinate, but Kinnard knows better. Superiors have their own ways; as commanding officer of the only PARN deep-space vessel crewed almost entirely by a clan, Kinnard has to accept this.

The Christ family is one of the few clans that has sworn allegiance to the Pax Astra; most Superiors have either proclaimed political neutrality, or secretly aligned themselves with the *Jove* Resistance during the Callisto rebellion. On one hand, Kinnard counts his good fortune that his crew, as inscrutable as it often was, is willing and capable of following his orders, even during the nine long months that he had spent in the zombie tank.

On the other hand, because the Royal Navy knew that Superior allegiance is tenuous at best, NAVINT had decided not to trust *Intrepid's* crew with full knowledge of its mission. Only the captain was given the details of the rescue mission...and, conveniently, he had been incommunicado within a zombie tank for most of the flight.

Kinnard muses upon this as he pushes himself down the gopher hole to his cabin, three decks down from the command center. As he presses his thumb against the lockplate, he checks the digital read-out above the door. To his satisfaction, it reads 6.10.2069 1350Z; the last time he entered the cabin, just before *Intrepid* left Highgate.

The tiny cabin is dark, its trapped air musty and old. Ceiling fluorescents light up as Kinnard pulls himself inside. Everything is just as he left it: the framed holos on the wall, the bookcase containing operations manuals and a leatherbound copy of the *Rebaptism of Oumar Kbangaym*. He shuts the door behind him, folds down a desktop next to his bunk. Concealed in the bulkhead behind the desk is a safe, which he unlocks with his thumbprint and a memorized six-digit code number.

An envelope floats inside the safe, sealed with a red strip of tape, dated with *Intrepid's* date of departure from Highgate. Kinnard breaks the seal and opens the envelope.

DATE: 0810Z 11 MAR 70  
FM: CHNAVINT CLARKE CO  
TO: PRIME MINISTER  
SUBJ: TITAN RESCUE  
CLASS: TS

1. (S) UPDATE: PRIORITY ONE SCRAMBLED PADSS TRANSMISSION RECEIVED 11 0756Z MAR 11 FROM PARN VA-145, FRIGATE *INTREPID*. CAPTAIN MARION KINNARD REPORTS SAFE ARRIVAL IN SATURN SYSTEM.

2. (TS) *INTREPID* REPORTS NO TELEMETRY RECEIVED FROM PA VS-29, ARGOSY *HERSHEL EXPLORER*, OR FROM HUYGENS

BASE ON TITAN, DESPITE REPEATED ATTEMPTS TO CONTACT EITHER SHIP AND OUTPOST. NO AVAILABLE INFORMATION ON STATUS OF *HERSHEL EXPLORER* CREW OR HUYGENS BASE EXPEDITION.

3. (TS) PARM 5TH INFANTRY, MARE IMBRIUM COMPANY, BRAVO SQUAD SUCCESSFULLY REVIVED FROM BIOSIS ON *INTREPID*. CAPTAIN KINNARD TO BRIEF LT. COL. JULIETTE DESOTO AND TEAM, RE: CLASSIFIED ASPECTS OF THEIR MISSION AT 1000Z MAR 11.

4. (TS) OUTLOOK: *INTREPID* PROCEEDING TO TITAN FOR SCHEDULED FLYBY AT 0100Z MAR 12. BRAVO TEAM UNDER LT. COL. DESOTO WILL DEPART *INTREPID* ABOARD PARN VA-145, MILITARY LANDER *EXCALIBUR*, FOR LANDING AT HUYGENS BASE. *INTREPID* WILL COMMENCE AERO-REFUELING AT SATURN BEFORE RETURNING TO TITAN FOR INVESTIGATION OF *HERSHEL EXPLORER* AND PICKUP OF *EXCALIBUR* LANDING PARTY.

5. (TS) MILITARY CENSORSHIP IN EFFECT. PRIORITY ONE COMNET SCRAMBLE OF ALL COMMUNIQUE ENACTED 11 MARCH. NO INFORMATION WILL BE RELEASED TO THE PUBLIC OR PRESS PENDING SUCCESSFUL OUTCOME OF RESCUE OPERATIONS ON TITAN.

(6.) ALL FUTURE MEMOS RE: PARN/PARM OPERATIONS IN SATURN SYSTEM TO BE CODENAMED "KRONOS"

END

11.03.2070  
1 0 0 1 Z

Lt. Col. Juliette DeSoto stares at the warm tray of what looks, and smells, like boiled seaweed in white sauce and decides that she's not quite so hungry after all.

Before she places the lid back over her tray, though, she glances down the long wardroom table and notices that her team is discreetly watching her, waiting for her reaction. If their CO won't eat this stuff, no one in Bravo Squad will either—and since this is probably the best *Intrepid* has to offer, that means her people will go on their mission with empty stomachs. Not only that, the young goggle female—Anna, is it?—who has carried the plates in from the adjacent galley is hovering nearby, nervously awaiting their response to her culinary talents.

So, for Queen and the Pax, DeSoto pulls a pair of chopsticks from the magnetized holder next to her plate and pretends that google food is the essence of *haute cuisine*. The seven men and women seated at the table reluctantly follow her example; everyone in Bravo Squad takes their first bite simultaneously, each watching the other to see who will gag first.

Much to her surprise, it's actually quite good. Rather like asparagus in hollandaise sauce, but a little spicier. Everyone swallows and goes for more; even "Power Chuck" Clay, who is notorious for being picky about what he eats, is digging into the food with apparent relish.

Nevertheless, DeSoto is careful not to ask Anna what they're eating. She may not like to know the answer.

As she eats, DeSoto gazes around the wardroom. It's as small as those on any PARN vessel she has been aboard, but far less Spartan. The table is of polished fauxwood inlaid with gold filigree; the fold-down ergonomic chairs are upholstered with soft blue velvet, hand-embroidered with intricate designs vaguely resembling goggle tattoos. Abstract Martian sand paintings are fastened to the bulkhead walls behind either side of the table; one features the Gaelic cross she has already seen on the faces of the crewmen, the other might be an original Milos, or at least a clever copy. Red silk curtains frame the wide square windows behind the table, and an antique brass tele-

scope is bolted to the carpeted deck in front of the center portal. Even the chopsticks, she now notices, have been carved with scrimshaw designs.

And she had always thought googles spent their ship time having sex with each other.

They're almost finished when the hatch opens and the first Primary they've seen since awakening from biostasis floats into the wardroom, followed by Isidore, the ship's first officer, whom they met when he escorted them here from the habitation deck. Even if his jumpsuit didn't have three stars on its epaulets, it would be obvious that this is *Intrepid's* commanding officer.

"Captain on deck," DeSoto says calmly, and her team goes bolt-upright in their seats. A chopstick tumbles upward from the table plates, dropped by someone who forgot that they're in free-fall; Anna snatches it from mid-air with her left foot and silently returns it to Slick Nick, who mumbles apologetically.

"At ease." The captain floats to a vacant seat at the opposite end of the table, tucks his ankles under the leg bar, and sits down. "Sorry to disturb you, but I thought this was as good a time as any to welcome you aboard the *Intrepid*. I'm Captain Kinnard, and I believe you've already met my first officer, Mr. Ortega-Christ."

Bravo Squad murmurs polite greetings to Kinnard and Ortega-Christ. Since they were placed in biostasis on Highgate before their zombie tanks were transferred to the *Intrepid*, this is the first time they've met her captain or crew. Indeed, other than their ultimate destination and the basic purpose of their mission, DeSoto and her people know little about why they've been sent all this way.

Which, she reflects, is the way it should be. Bravo Squad is part of Mare Imbrium Company, an elite cadre of the Royal Militia formed as a rapid-response team to handle emergencies that threaten Pax Astra interests. Alpha Squad had quelled the Callisto rebellion a couple of years earlier, last year, her own squad had knocked down an attempted coup d'état on Clarke County by New Ark Party loyalists. Indeed, just before it was dispatched to Highgate, her team had been engaged in tactical exercises at the Straight Wall on the Moon, training for combat against renegade Superior clans who had aligned themselves with the Jove movement and might conceivably launch a first-strike attack against Pax lunar settlements.

Yet, because the Royal Militia was a civilian army with most of its soldiers leading private lives and careers outside the army and because the Pax itself was rife with informants actively engaged in espionage on behalf of clients both on Earth and in the outer system, the rapid-response teams rarely know the full details of their covert missions before they're actually deployed. Thus Colonel DeSoto knows little more about the mission than her troops. Likewise, because the Navy knew that the allegiance of the Superior clans that crewed its frigates was suspect at best, NAVINT had decided not to trust *Intrepid's* crew with full knowledge of its mission. Only the captain knew everything.

"If you're through," Kinnard says, "then we'll start your briefing." He touches his wristcomp, and the multiscreen above the table lights up.

The first image is a cutaway diagram of a *Tycho*-class argosy. It's the same type of vessel the Pax has been using for deep-space exploration past the Belt for the last fifteen years, older and larger than *Intrepid*. Much slower, too; DeSoto recognizes the General Astro-nautics gas-core nuclear engine mounted at the end of the ship's boom as one with a considerably smaller lps-ratio than *Intrepid's* nuclear-pulse engine.

"This is the *Hershel Explorer*," Kinnard says. "It departed from

Highgate on January 20, 2068, and arrived here about fourteen months later, on March 15, 2069, almost exactly one year ago. At that time the flight crew revived the science team from biostasis. Total crew complement was twelve."

He changes the image; the multiscreen now displays still-pics of the expedition members. DeSoto notes that they're all Primaries. "The expedition was conducted under the joint auspices of the Royal University and the Navy," Kinnard continues. "Its commander was Captain John Stephen Baylor, and his crew was the Jones clan...a Primary family, as you may have already noticed, since there were no Superiors aboard. The five scientists from the University were led by Henri Marquand."

This would figure. The first clans were made up of Primaries who pioneered the idea of extended families crewing deep-space vessels

nearly a generation before the googles founded their own clans. A few of the older Primary clans still served aboard Pax vessels.

Perhaps his tongue had only slipped, but DeSoto cannot help but notice that the captain referred to the *Hershel Explorer* expedition in the past tense.

Another click, and the faces are replaced by an animated diagram of the ship's trajectory through the Saturn system. "The expedition spent the next three weeks conducting a flyby survey of Saturn and its moons," Kinnard goes on, "then on April 8, *Hershel* made orbit around Titan. Its shuttle, *Ulysses*, went down to the surface on April 10, where it landed near the equator on Gallio Flantia, Titan's single major continent."

A succession of images taken from Titan's surface: muggy and indistinct, shot through a dense brown fog that shallows the dim glow cast by helmet lamps and floodlights. Figures in pressure suits moving in and out of light, trudging through red snow. A small cluster of domes. The lower fuselage and landing gear of the shuttle. Blurred views of small, open-seat rovers leaving deep tracks through cranberry slush.

"After the base camp was established," Kinnard says, "the science team lived exclusively at Huygens Base. They frequently conducted sorties across the ice-pack, but never beyond a six-hour hike from the camp, in case the rovers went kaput, and they always returned before nightfall. Although the flight crew remained in orbit, on at least three occasions various members of the Jones clan, along with Captain Baylor, visited the surface aboard the *Ulysses*."

"Uh...pardon me, sir?" This from Doc Ascorovich, the squad medic. Kinnard acknowledges his raised hand with a nod. "With all due respect, sir, we saw all this during our briefing, before we left Highgate. So, ah..."

"So when are you going to tell us why we're here?" Doc is interrupted by "Sweet Pea," Patry Barnes, the team's not-so-sweet Spec. 2 demolitions expert.

"Like you got a date waiting back home?" Little Jimmy asks from farther down the table.

Sweet Pea pretends to throw one of her chopsticks at him. Everyone else — Power Chuck, Smoker, Slick Nick, No-Shit — breaks up at this. Sweet Pea is notorious for being unable to keep a steady mate of either gender.

"Turn it off!" DeSoto snaps, and Bravo Squad freezes under her basilisk glare. "Sorry, Captain," she says. "Go on, please."

Kinnard seems unruffled by the interruption. "Sorry to bore you," he says to Doc and Sweet Pea, who contritely study the laces of their gripboes. "Things will get more interesting, I promise."

"More interesting than this googie shit, I hope," No-Shit murmurs, idly poking a chopstick at his half-eaten plate of food.

Smothered laughter from around the table. Isidore glares at Howard, and DeSoto is about to admonish the Spec. 3 when the hatch



opens and several googles float into the wardrobe.

Time itself seems to grind to a halt. Apes stare at googles and Superiors stare back at Primaries; neither side knows what to say to the other until Kinnard breaks the silence.

"My crew, ladies and gentlemen," he says, then he does his diplomatic best by introducing each member of the Christ clan by name. Brief nods and acknowledgments from all around — but no handshakes, let alone smiles — as the googles find handholds or footholds on the walls and ceilings until they hover over Bravo Squad like weird angels.

When the wardrobe is filled to capacity, the captain continues his briefing. "Just as well everyone is here," he says, "because you all need to see this."

He touches his wristcomp again. The expedition footage vanishes from the multiscreen. "Daily reports were sent from Huygens Base to Mare Muscoviense via PADSS until May 29," he continues, "then there was a two-day gap during which no transmissions were sent from either Titan or *Hershel Explorer*. The Pax attempted to contact the base camp and the ship, but no one heard anything. All lines were dead, and that's when Naval Intelligence started getting nervous. Then, on June 1, a signal was received from Huygens Base...scrambled, Priority One, code nine-niner."

He hesitates, looking around the room. "It's classified Top Secret," he adds softly. "I'm the only one aboard who has seen it until now."

He taps at his wristcomp again. The multiscreen lights once more, and they watch the final dispatch from Titan.

RECD: 05.29.2009 1834.32 01Z PADSS MARE MUSC

CODE 01A-99/98101/VS-29

DECRYPTED: 05.30.69 0100 NAVINT CLARKE CO

CLASS: TS

BEGIN TRANSMISSION

Close-up shot: a man seated at a console, staring straight into the camera lens. Background image slightly unfocused; seems to be within a small compartment. His eyes are wild, face haggard and unshaven, curly dark hair matted. The T-shirt he wears is soaked with sweat; a dark red stain, like a smeared bloody handprint, is spread across his chest.

Subscript appears at the bottom of the screen: *I.D. — Marquand, Henri P., Dr. (NAVINT Confirmed).*

Marquand's lips move silently for a few moments. He abruptly stops; his face registers bewilderment as he cups his right hand against his forehead. He reaches forward to some point below camera range.

"...said, this is Huygens Base, Titan, to *Hershel Explorer*. Code nine-niner, mayday, mayday. I repeat, this is Huygens Base to *Hershel Explorer*, code ninety-nine, mayday..."

The mike picks up an irregular thumping noise from somewhere in the background. Marquand looks sharply to the right.

"Shit! Does anyone hear me? Answer me!"

Right hand moves out of sight below the console for a moment; it reappears, clasping an unidentifiable piece of metal which he wrists like a club. He turns and shouts behind him.

"Back off!"

The thumping stops. His gaze returns to the camera. Terror in his eyes as he takes a deep breath.

"*Hershel AI*, this is Marquand, Huygens Base. Emergency comlink override. Open PADSS gateway, transmission to lunar farside, code...oh, fuck, what is it?...code oh-one-a, priority nine-nine, message..."

The thumping recommences, louder now. Marquand glances away again, then back at the camera.

"Huygens Base under attack by hostile...no, I mean...alien presence...fuck, that's not right, I mean..."

The thumping drowns out his words for a moment. Marquand pushes back his chair, stands up, hefts the metal bar. Eyes shift toward some source behind him.

"...something we found on the surface, we brought it into the AEL, and...I damn, somehow it got into the base and I think it's on the

*Hershel*, and now just about everyone is dead and I'm —"

Low crush from behind him. Marquand whirls around, raising the bar defensively.

"Oh, God, they're through the door! They're —!"

He charges out of camera range.

"Goddamn it, get back, get —!"

Sounds of a violent scuffle. Vague shadows move across the console.

"Shit, oh God, please —!"

A loud, harsh scream.

A wet chopping noise.

Silence.

The unmistakable sound of laughter.

A vague form flits across the screen, too close and too fast for the camera to either capture or focus upon.

The screen abruptly goes dark.

END TRANSMISSION.

03.11.2070  
1110Z

"So, Captain," DeSoto says, "tell us the rest."

Bravo Squad has been dismissed to its temporary quarters on Deck Five to catch some rest before the Titan flyby. *Intrepid's* flight crew has either returned to the command deck or gone off-duty. Only Kinnard, DeSoto, and Isidore remain in the wardrobe, drinking coffee as they idly watch the spiderlike galley bots clear the table.

Kinnard glances toward the hatch, making certain that it's shut. "I don't know what you mean, Colonel. I've briefed you on all aspects of this operation, including the classified details. I don't know what else is left."

She sips her squeezebulb of coffee. "C'mon, Captain," she replies.

"Someone took out the entire expedition —"

"Something, perhaps you mean," Isidore interjects.

The colonel gives him a condescending look. "You've got another theory, First Officer? Hostile aliens, maybe?"

"Said as much, doesn't he?" Ortega-Christ nods toward the blank multiscreen. "Said something came into the base through the ambient environment lab, then onto *Hershel*. Sounds like ETs to me, Colonel... begging your pardon, of course."

Kinnard hides a smile behind his squeezebulb. Isidore's conjecture may be wrong, but he allows DeSoto more respect than she or her people has offered her crew. The rivalry between the Navy and the Militia dates back to the Moon War almost twenty years ago, when both services were born during the Pax Astra's war of independence, and the fact that the Navy has actively enlisted Superiors while the Militia is comprised almost entirely of Primaries hasn't helped matters much. A little friction between military corps can be a healthy thing, so long as it doesn't dissolve into uncooperativeness... or outright bigotry.

DeSoto continues the attack. "If aliens caused this," she says, glaring at Ortega-Christ, "then why did we hear someone laugh in the background after Marquand was killed? And don't tell me an ET can laugh like that."

Isidore shrugs; she has him stumped. They have watched the transmission twice now; both times, they had heard distinctly human laughter near the end. "Nada explanation," he concedes. "But rule out ETs either, we cannot."

"Which leads us back to my first question," DeSoto turns to look at Kinnard. "You've received your orders direct from River House. I can't believe Pax Intelligence has seen this disk and hasn't come to conclusions of their own. So what are we looking for? Humans, aliens... what?"

It isn't hard to read meaning into the *what?* part of the question.



DeSoto wants to know if NAVINT believes that Superiors are behind the attack on Huygens Base and the loss of signal from *Hershel Explorer*. After all, Bravo Squad was aboard a vessel crewed almost entirely by Superiors much like those her troops have been trained to fight.

Kinnard idly plays with the squeezebulb in his hands. "The truth is, nobody knows for sure who or what we're up against. It could be ETs, or baseline humans, or... giving his first officer an apologetic look "... a Superior clan that has aligned itself with the Jove rebellion."

"No clans have sent expeditions this far out." Isidore remains calm, but his voice has a threatening edge. "This range, their ships don't have."

Kinnard quickly nods his head. "I understand that, *jeff*. I'm not accusing you or any other clans of..."

"But the possibility of goo—of Superior involvement can't be ruled out, either." DeSoto pointedly doesn't look in Ortega-Christ's direction. "And there have been no indications of ET ships entering the system, have there, Captain?"

Kinnard takes a deep breath. True, relics of an advanced alien race were discovered on Mars almost sixty years ago, indeed, the official record of what occurred at Cydonia Base in 2032 has remained a secret that the Earth governments involved in the incident have guarded ever since. In 2056, astronomers in North America and Europe detected what appeared to be an alien craft passing through the Kuiper belt. Attempts were made to signal to the suspected starship, but if they were received or understood, there was no indication; the vessel simply vanished as if it had fallen into a hole. Intelligent life existed elsewhere in the galaxy—that question had finally been laid to rest, at least—yet it didn't seem to be very interested in humankind.

"No," he says truthfully, shaking his head. "No one has spotted an alien ship entering the system, let alone in proximity of Titan. I would have been informed if that was the case."

"So it isn't aliens," DeSoto says, "and if there aren't any PARN vessels out this far, and the Jovians haven't decided to take out a Pax expedition just for the hell of it..." She raises an eyebrow. "Well, it does narrow down the list of suspects, doesn't it?"

"A clan would not slaughter civilians!" The crucifix on Isidore's forehead wrinkles, his long fingers clench the chair armrests. "Insult us you do, suggesting that my people would—"

"Knock it off, both of you!"

DeSoto and Ortega-Christ are startled into silence. Isidore's hands relax from his hand rests. DeSoto takes a sip from her squeezebulb and looks away. Kinnard gives them a moment to calm down, but before he can continue, DeSoto raises her hand.

"Regardless of whoever may be at fault," she says, still avoiding Isidore's eyes, "I have an objection with the current mission profile."

"Go on."

"As it stands now, you intend to drop my people on Titan before proceeding to Saturn. I understand the reasons for doing it this way. You need to refuel as soon as possible."

"But you have a problem with it."

"From Titan flyby to return rendezvous with *Excalibur*, there is a twenty-six-hour stretch. That's the time, at bare minimum, that's required for *Intrepid* to make its run and meet up with the shuttle. During that period my team will be on Titan, with no backup from orbit."

Kinnard frowns. "*Excalibur* is outfitted for a two-week stay, if necessary."

"In terms of basic life-support, sure. But the shuttle is not equipped with its own weaponry. Given the presumption..." DeSoto hesitates, then corrects herself. "Given the likelihood that there are no survivors at Huygens Base, I consider it imprudent for *Intrepid* to be so distant from Titan."

Kinnard absently caresses his chin with his forefinger. She has a point. Once *Intrepid* went deeper into Saturn's magnetosphere, radio contact within the landing party would become progressively difficult, finally impossible as the ship went around the planet's far side.

If Bravo Squad ran into problems, it could be several hours before *Intrepid* found out, and even longer before it could respond. More to the point, though, *Intrepid* also carries two orbit-to-surface missiles. If there is trouble on the surface, Bravo Squad can call in a space-strike as a last resort.

And without a doubt, there's something hostile on the Galileo Planetia. Leaving eight men and women down there, however well-armed and trained they may be, could be a fatal risk.

Isidore is already recalculating *Intrepid*'s course on his wristcomp. "*Jeje*, can we adjust the trajectory to put us in orbit around Titan?" Kinnard asks.

The first officer doesn't look up from his work. "Burn more fuel from reserves, but that we can do, yes." He hesitates, still tapping at his wrist. "Even tweak the delta-vee a little, rendezvous with *Hershel* after we drop *Excalibur*. Give us a little time for a look-see."

"How does that affect the refueling run?"

"Like I say, takes more from the reserves. Ten-plus drain, my figure." He shrugs. "Little more, little less. May have to armstrong it down the gravwell. Iffy kinda but can do."

Kinnard considers it for a moment. "OK," he says, "go topside and tell Jon to lay it in. We'll do the run after we get *Excalibur* back aboard. Tell Marie to alert FLTCOM of the change."

"Pitch a bitch, profly."

"Profly...but it's my ship."

"Gotcha, Captain." Isidore pushes out of his seat and heads for the hatch.

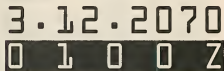
Kinnard looks at DeSoto. "Satisfied, Colonel?"

"Completely. Thank you, Captain." She starts to push out of her chair. "Would you like to accompany my team down to the surface? I can ask one of my men to stay behind to give you room on the shuttle."

Kinnard catches a wary glance from Isidore. "Thanks, Colonel, but that won't be necessary. I prefer to stay behind with my crew."

Isidore's sly smile is matched by the stiffness of DeSoto's parting salute. Kinnard waits until they've both left and Isidore has shut the hatch behind him before he slowly exhales.

Looking down at his hands, he is not at all surprised to find that they're trembling.



#### PARN EXCALIBUR

"Three...two...one...drop."

A dull vibration runs through the fuselage as the shuttle disengages from its cradle.

DeSoto looks up, catches a brief glimpse of *Intrepid*'s lower hull and blunt prop gliding past the cockpit canopy, then Lieutenant Simms pushes the throttle forward and twin liquid-fuel engines mounted on both sides of the fuselage ignite.

Gravity forces her back into her couch as *Excalibur* darts forward. *Intrepid* falls away, becoming toylike in only a matter of moments, finally disappearing entirely as the shuttle yaws forward.

She looks forward as Titan hoves into view through the canopy: a burnt-orange hemisphere, featureless except for the thin hazy-blue skin of its upper atmosphere. Saturn hovers above its limb, twice the size of the Moon as seen from Earth orbit, its vast rings now a tilted plane that bisects the planet neatly in half.

"Are we there yet?"

"Mommy, I gotta go to the bathroom!"

"Tell Sweet Pea to stop hitting me!"

"Smoker hit me first!"

Mock childish voices and coarse adult laughter in her headset. DeSoto glances at Slick Nick; his concentration is totally focused





# 1996

## JANUARY

S	M	T	W	T	F	S
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
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28	29	30	31			

## FEBRUARY

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## MARCH

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## APRIL

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## DECEMBER

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on his instruments, but a wide grin spreads across his face. "Now, now, behave," he murmurs. "We still have eight hundred kilometers to go. If you can't behave yourselves, we'll just have to turn around and go home."

"Can we really?"

"Yeah...I wanna go home, too!"

DeSoto finds herself grinning despite her nervousness. She can't see her team; they're in the passenger compartment on the other side of the cockpit hatch, already sealed inside the massive Hoplite combat armor suits they'll wear on the surface. She can't share the stunning view that she and Slick Nick have through the pressurized cockpit windows.

She clicks on the comlink. "If you'll promise to be good," she says, "I'll let you look out the window." She then reaches up to the com panel and flicks switches that will feed *Excalibur's* forward camera into their suits' stereo-optic viewplates. Her people immediately drop the backseat-brat routine.

"Whoa!"

"Hey, check it out!"

"Man, will you look at that?"

"Shit, that's better than sex!"

"How would you know?"

DeSoto lets them carry on like this for a while, until Titan completely fills the canopy and she can see the first amber glow of atmospheric friction lighting the edges of *Excalibur's* long wings. Slick Nick silently holds up his gloved left hand and clenches his fist three times. "OK," she says, "tighten it up back there. We'll be on the ground in about fifteen minutes, so double check your suits, then check your buddy's."

A sudden surge of turbulence causes *Excalibur* to lurch violently, its wings wagging back and forth as they grab the first reaches of the upper atmosphere. Her stomach jumps up and down; she grabs her armrests. "This could be rough," Slick says, "so hang on."

And don't puke, she silently adds, now glad that she insisted against Anna Webster-Christ offering breakfast to her team before they left. Not that anyone was looking forward to more algae salad...

*Excalibur* dives through Titan's hazy blue stratosphere, wings flapping behind long curling streamers as the shuttle streaks over dense cloud banks of hydrocarbon smog. For a few scant moments, the rolling cloud tops are highlighted by refracted sun dogs; Saturn is a placid quarter-moon suspended in blue mist above a weird twilight. A surreal vista, as breathtaking and pure as any DeSoto has seen in her far-traveling life, easily matching an autumn sunrise over the Colorado Rockies or twilight on Olympus Mons.

Then the shuttle plummet through the cloud layer and Saturn is lost to sight. DeSoto glances at the altimeter; they're now three hundred kilometers above the surface. Nothing can be seen through the canopy except dense orange smog reminiscent of the noxious fumes that billowed out of factory smokestacks on Earth in the last century.

Slick Nick taps commands into the keypad on his yoke and a translucent heads-up display appears on the inside of the canopy: a three-dimensional map of Galileo Planitia's equatorial zone. A red spot pulses below their angle of descent. "Intrepid, this is *Excalibur*," he murmurs into his headset mike. "Altitude three-seventy-five klicks, downrange one-hundred-two klicks and closing. Huygens Base homing beacon acquired. Picking up some chop, but all systems green for go."

"We copy, *Excalibur*," replies Marie Ortega-Christ. "Confirm your position. You are go for primary approach. Over."

"Roger that, Intrepid." Nick cups his hand over his mike and glances at DeSoto. "Nice of her to knock off that google shit for once. I swear, I can't understand what they're saying half the time."

DeSoto clutches her armrests as the shuttle lurches again. "Keep your mind on the job, Lieutenant," she says. "This isn't the simulator." "Naw. It's easier." But he places both hands firmly on the yoke as he returns his attention to his instruments.

It takes forever to penetrate the smog, and when they finally do, visibility is only slightly better. At two hundred kilometers, the ground

is still invisible, lost beneath vast methane clouds only slightly darker than the sky around them. Yet the turbulence diminishes as *Excalibur* sweeps downward through the reddish-brown sky.

The beacon pulses brighter now; the pilot locks the guidance computer onto its signal and a concentric grid appears on the heads-up display. As he radio-checks Intrepid again, DeSoto roll-calls her team through the comlink. No problems; everyone's CAS is working properly, no suit leaks or computer glitches.

*Excalibur* is twenty-six klicks up and fifteen klicks northeast of the target when it penetrates the lower cloud decks. DeSoto is startled by the gentle patter of rain against the canopy. Looking up, she sees fat amber droplets splattering against the dense glass. She remembers her mission briefing at Highgate: It's ethane rain. Titan is one big soup kettle of organic chemistry — nitrogen, methane, trace amounts of various compounds and acids existing in gaseous, liquid, and solid states — much like Earth itself during its primitive millennia, although Titan's atmospheric pressure at sea level is four and a half times as dense as Earth's, and its globe-circling ocean is a sludgy mass of liquid ethane. If the pressure were to crack the shuttle's fuselage and the cockpit was flooded with gas, she imagines that her last impression of this life would be of a rank odor like an elephant furt.

Thinking of this, she reaches beneath her seat to retrieve her pressure suit helmet. Why take chances?

Ten klicks above the surface, seven klicks downrange from Huygens Base, and still she cannot see the ground. Outside the canopy, everything is cloaked in dung-colored darkness, broken only by the strobing wing lights and the geometric graphics of the heads-up display. Slick Nick no longer makes wisecracks; his concentration is totally focused on his instruments as he coaxes *Excalibur* toward the homing beacon. DeSoto wants to ask him if this is still like running the simulator back home, but decides against it; she just hopes that he's worthy of his nickname.

Five hundred meters above the surface, two hundred meters from the base; Nick switches on the landing lights, but they still can't see a thing outside the canopy. Sweat coaxes down the pilot's forehead as he throttles back the main engines, hits the VTOL pods, and lowers the landing gear. The jets howl bloody murder, almost drowning out the steady stream of pings sent by the sonarscope; there's solid surface down there after all, but that's the only comfort they have.

It isn't until *Excalibur* is less than twenty-five meters above the surface and forty meters from the beacon — almost dead-center in the bulls eye — that she catches the first glimmer of light through the canopy: a glowing oval of spotlights off the port wing, fading in and out of the darkness like a lost soul.

"There it is!" she shouts, pointing toward the light. Her cry is lost in the staccato rattle of broken ice bouncing off the lower fuselage. There is a loud thud as the landing gear pads stamp down upon the frozen surface. Slick Nick's hands rush across his console, switching everything off, as *Excalibur* settles on its gears and, finally, comes to a halt.

DeSoto closes her eyes, takes a deep breath, and slowly lets it out. Then she tells her pilot to decompress the passenger hold and pop the lower fuselage hatch.

3.12.2070  
0 2 3 4 Z

#### PARN INTREPID

*Herschel Explorer* drifts in equatorial orbit a thousand kilometers above Titan, somehow looking less like a spaceship than an abandoned house. The windows of its rotor arms are dark and the arms themselves are still, nor is there any light shining through the port-holes in its barrel-like hub. The only clue that the vessel's nuclear

generator is still active is the glow of red and blue navigation beacons scattered along its hull; otherwise, the giant ship could well be one of those decommissioned spacecraft parked in the orbital junkyard at the third LaGrange point between Earth and the Moon, awaiting salvage for scrap metal and spare parts.

"Word up from *Erebor*, Captain." This from Marie Ortega-Christ, seated at the com station. "Safely arrived at Huygens Base, preparing to send out the squad."

Kinnard nods, not taking his eyes from the windows. *Intrepid* is positioned three hundred meters from the *Hershel Explorer*; he hasn't been able to take his eyes off the silent argosy since they've arrived. "Copy that," he says distractedly. "Let me know when they've entered the base." He prods his jaw with his fingertips. "Cayenne, how's Isidore doing?"

"Suited up, in the airlock." The chief engineer's voice is a mosquito buzz in his left ear. "Decompressing now."

"Very good." Kinnard looks back at Marie. "Open comlink with Isidore and his 'bot. Display everything on the screens." He hesitates. "Feed everything into the flight recorder," he adds. "Audio, suitcam, telemetry from the 'bot, the works. I want everything on both disc and hard memory."

Marie's fingers twitch in midair as she follows his orders, and Kinnard revolves his chair to gaze at the multiscreen above the chart table. Two sets of images appear on the screens: the interior of the main airlock as captured by the tiny camera mounted on Isidore's right shoulder, and an external shot of the airlock hatch as seen by the spiderlike repair 'bot clinging to *Intrepid's* outer hull.

"Comlink check, one-two-three." Isidore's voice is slightly fuzzed as it comes through ceiling speakers in the command center. He holds his left hand up to the camera and wiggles his thick-gloved fingers; the image blurs for a moment, then refocuses. "Copy everything, Marie?"

"Roger that," she says to her first-husband. "See you just fine. Careful now, you be."

"Airlock decompressed," Cayenne says. "Opening outer hatch."

Two points-of-view of the same action: inside the airlock, the hatch unseals and silently slides upward; the 'bot catches the same image from outside the ship. On one screen, the circular portal moves closer until it is filled with Titan's orange hemisphere, with the *Hershel Explorer* hovering in the foreground; on an adjacent screen, the head and shoulders of a figure in bulky EVA armor slowly emerges from the open hatch.

"Switching to manual control of the 'bot." Marie's hands spread open as if she is groping her way through a dark room. As Isidore exits the airlock, the 'bot casts off the hull and follows him, its stereoscopic eyes catching tiny flares from his EVA pack as he begins his untethered spacewalk toward the *Hershel*. In one sense, Isidore is being accompanied by his first-wife; she controls the 'bot as if her mind has been transplanted into its arachnid form.

"Mark, one minute," Jon says from his console. "Dosimeter count nominal."

Kinnard nods. Here within Saturn's magnetosphere, Isidore's spacewalk is limited to a maximum REM exposure time of twenty-six minutes; after that, Kinnard has to pull his crewman back in, regardless of whether his objectives have been accomplished or not. The 'bot can continue an external inspection of the ship, but it's not designed to fit into *Hershel's* airlock.

As Isidore floats toward the *Hershel*, his suitcam catches a glimpse of a bat-winged shape nestled in the argosy's payload bay, above the fuel tanks and behind the rotor arms: *Ulysses*, the ship's lander. Kinnard takes note of the fact: It either means that the science team had returned to the *Hershel*, or that some of *Hershel's* flight crew were still aboard the ship, before the communications blackout.

To his relief, it takes Isidore just less than ten minutes to cross the void between the two ships, and less than a minute after that to locate the main airlock on the hub. It is then that they encounter the first surprise:

"*Intrepid*, the airlock hatch is open."

This observation is almost unnecessary; through both the 'bot's eyes and suitcam lens, Kinnard can see a dark, circular hole where an iris hatch should be. "Check the inner hatch," he says, but Marie's 'bot is already scuttling closer on its magnetized legs, its stalk-mounted eyes peering down into the black maw. A moment later, Isidore's helmet lamp illuminates the airlock interior.

Nothing reflects the light except the airlock walls. Beyond that there is only more darkness, as if they were peering into a bottomless well.

"Inner hatch open, too," Isidore says.

There is a quaver in his voice, and Kinnard knows why. Both hatches cannot simultaneously open by accident; the ship's AI would automatically prevent

such a catastrophe from occurring. The only way this might occur would be if someone deliberately reprogrammed the AI to disregard a vital fail-safe routine, and that was suicidal....

"Mark, thirteen minutes," Jon says.

Kinnard nervously rubs his chin. Isidore has to begin his return to *Intrepid* now...or he goes inside *Hershel*. Before Kinnard can make a decision, though, his first officer does it for him.

"Going in," Isidore says.

On one set of screens, the airlock fills the suitcam's field of view; on another, the 'bot sees his spacesuited body disappearing headfirst through the outer hatch.

3.12.2070  
0246Z

#### HUYGENS BASE

Bravo Squad advances on the base as a V-shaped formation, the beams of their helmet lamps quickly swallowed by the darkness around them, guided by little more than the dim ring of floodlights surrounding the habitat. The soldiers have only ventured twenty meters from *Erebor* before it becomes invisible save for the dim glow of its wing lights; only the lights before them and telemetry from the shuttle, displayed on the heads-up screens within their CAS armor, prevent them from getting disoriented and lost.

Digital gauges inside their suits inform them that the surface temperature is ninety-three degrees Kelvin; the only sound they hear, aside from the voices on the conalink, is the sullen crunch of methane ice beneath their boots.

Power Chacir "Look sharp, guys. Keep the formation tight."

Sweet' Pea: "Look at what, Sarge? I can't see a damn thing."

Power Chuck: "Just follow the guy in front of you."

No-Shit: "Shit! I'm slippin' and slidin' all over the place!"

Power Chuck: "Keep your gun pointed down. I don't want anyone getting shot in the back if you fall."

Smoker: "Can't you just go to jump-jets? We can cover ground a lot quicker that —"

Power Chuck: "Negatory on that. Just head toward the lights and keep walking."

And so they do, six tin soldiers alone in the freezing darkness, sky and ground nearly indistinguishable from one another, until they enter the ring of lights and a metal hemisphere abruptly looms before them. The flashing red beacon at its apex reflects dully off their massive carapaces. A small rover is parked nearby, empty and abandoned, like a dune-buggy stolen from a California beach by space aliens who went joy-riding before ditching on the other side of the solar system. The airlock is surrounded by hundreds of frozen footprints; its outer hatch is closed.

Sergeant Clay opens the hatch and peers inside. The airlock is just large enough to accommodate four armored soldiers. Power Chuck orders Sweet' Pea and Smoker to recon the habitat from the outside, then informs Colonel DeSoto — who, along with Slick Nick, is still aboard the shuttle — of his intent to enter the dome. She concurs, and so he takes No-Shit, Doc, and Little Jimmy into the airlock.

Cycle-through takes five minutes; a green light flashes on the control panel as the inner hatch thumps slightly. Power Chuck pulls the lockdown lever up, then slowly pushes the hatch open.

At first, he can see nothing except the bright oval of his searchlight reflecting against a bulkhead wall five meters away. No other light to be seen; the ceiling panels are dark, either burned out or deliberately switched off. Sergeant Clay pans his lamp around the antechamber; its beam casts shadows off the empty p-suits hanging from racks, the long row of helmets arranged along a shelf.

"We're in the ready-room, Colonel," he says. "Looks normal so far, other than that the lights are all out."

"See anyone inside?" DeSoto asks.

Power Chuck shakes his head. "No, ma'am." As he steps further into the ready-room, his searchlight finds an open hatch at the opposite end of the compartment, leading off to the left.

Corporal Barnes's voice comes over the comlink. "Nothing on the outside," Sweet' Pea says. "Perimeter secure. Outer hatch of the ambient environment lab is open, but we looked in and didn't see anything."

"We copy," DeSoto responds. "Clay, take your people farther into the base. Barnes, you and Hernandez proceed to main airlock but remain outside."

"Roger that," Power Chuck takes another two steps into the ready-room, allowing his squad mates to enter the compartment. Startled by a faint metallic grinding noise from behind, he turns to see Little Jimmy showing the inner airlock hatch closed behind him.

"Hey, Sarge," says No-Shit. "Request permission to pop tops."

Power Chuck checks his suit's ambient-environment panel. Atmospheric composition is oxygen-nitrogen and pressure is Earth-normal, but the temperature is nearly zero Celsius. If the base's power supply is still operational, it must have been diverted to keeping the habitat warm even this little.

Nonetheless, it would be good to stick their necks out of these damned suits. And it might help their search for survivors if they didn't have to peer at everything through periscopes or the tiny slots in their armor. "Colonel, Corporal Ballou has requested —"

"I heard," DeSoto says. "Permission granted to pop tops."

"Thank you, ma'am." Clay hears relieved sighs over the comlink as the other three men toggle palm switches which raise the oval lids of their suits. Frigid air rushes around his exposed face and neck as Power Chuck does the same. For a moment it feels delicious, after the humid warmth of his suit, then he coughs little clouds of steam as the cold penetrates his lungs. "It's cold as hell in here..."

And it smells bad. Beneath the iciness, there is a stench. His nose wrinkles at the first inhalation.

Sergeant Clay turns toward the open hatchway at the end of the suit-up room. As he does, his lamp beam grazes a small, dark object on a shelf containing p-suit helmets, in a corner where he hadn't looked until just this moment. Something about the object catches the light in a subtle, familiar way that makes him do a double-take. He turns back and fastens the light on the object, and recoils as a pair of eyes stare back at him.

A pair of eyes in a decapitated human head, carefully placed on the shelf so that it looks straight at the first person to enter the ready-room.

3.12.2070  
0317Z

#### PARN INTREPID

Images on the multiscreen, relayed to *Intrepid's* flight deck from both the *Hershel Explorer* and Huygens Base:

The headless corpse of Henri Marquand, sprawled across a carpet of dry blood covering the floor of the base control room.

The naked man found in the central passageway of the *Hershel*, hands locked in a death-grip upon the shaft of the reactor probe that was used to impale him to the bulkhead wall.

The woman hanged from a ceiling conduit in the base galley, her bare feet charred and blistered from exposure to the stove top just below her.

The body of a man floating weightless in the argosy's command center — no apparent signs of violence, dead nonetheless.

Stark silence in the command center as the grisly pictures are displayed on the multiscreen, broken only by an occasional staccato comment over the comlink from either Isidore aboard the *Hershel* or one of the soldiers exploring the base...and the sound of a woman weeping.

When Marquand's severed head appeared on the screens, Marie screamed out loud. Her MINN-link with Lieutenant Clay's suitcam had relayed the image into her mind just as clearly as if she had been in the CAS herself. Disconnected from the comlink now, she is curled into a tight little ball, hugging her knees against her chest, her tears tiny spheres that float around her face. Cayenne has temporarily taken her post at the communications console; Kinnard notes that she hasn't connected her own MINN to the comlink.

"Dead...all dead..." Marie whispers.

Kinnard swallows painfully; his throat and mouth are dry. Three bodies on the *Hershel*, six on Titan; virtually everyone met one sort of gruesome fate or another. A woman's throat was cut from ear to ear; a man was found in the base's secondary airlock to the AEI, still trying to pry open the inner hatch with his fingertips even as the gaseous nitrogen/methane filled his lungs...

Movement behind him. Kinnard pulls his eyes away from the multiscreen. Peter and Anna Webster-Christ have come on deck. They've watched everything from below decks; nothing has to be explained. Anna nestles Marie's head against her shoulder, trying to calm her. Kinnard catches her eye and nods toward the deck hatch. Anna says nothing; she takes her clan-sister in her arms and carries her toward the hatch. Peter watches them go, then glides over to Kinnard's seat, locking his feet around a ceiling rail.

"OK," Kinnard says softly, "you tell me...how many of these are murders, and how many are suicides?"

Peter's thin lips purse as he studies the multiscreen. "Tell for certain cannot, without being there..."

"Nobody leaves *Intrepid* until Isidore and the landing party come home," he says. Bravo Company has scouted the entire base; Isidore was still making his way through the *Hershel Explorer*. Three crewmembers are still unaccounted for, including Captain Baylor. Kinnard is unwilling to risk anyone else going EVA until he knows

what killed nine men and women. "From what you've seen so far, give me your best guess."

Peter hesitates. "No pathologist I am, no can sure tell without autopsies...."

"Best guess. Off the record."

Peter lets out his breath. "S'okay...most look like murder two, murder three. Nada suicides, far as I can tell. Two tortured during murder, like the woman in the galley, but suddenly most died, like caught by surprise. But see here...."

He touches his wristcomp; the image on one of the screens blurs as it goes into retrieval mode, then freezes on an image captured by Lieutenant Hernandez's suitcam fifteen minutes earlier: a dead man sitting against a bulkhead, his head bowed forward, his arms and legs sprawled out. Near his right hand is a bloodstained knife. "Look here," Peter says. "Nada injury. No mark on him. Just sat down and died, that's all."

He taps his wristcomp again; another screen whips into the recent past, stopping to show the weightless body Isidore discovered in the *Hershel's* command center. "No marks on him either," Peter says. "Entire hub decompressed when main airlock went open, but that's not what killed him. People in a blowout don't go into fetal position, but look...that's what happened to him. Just curled up and died."

Kinnard studies the bodies. "You think he died before the blowout?" Peter nods his head. "You think both of these people...?"

"The last ones to die, yes, I think."

They study the multiscreen for a few moments. "So what are the chances of both of these people going psycho at the same time?" Kinnard finally asks.

Peter ponders the question, then finally shakes his head. "Bet on that, I wouldn't. Think they killed each other, until only one person was left alive on both the ship and on Titan. Then they just up and died...."

"But what killed them?"

Having no answers and apparently unwilling to speculate, Peter doesn't reply. Kinnard is about to press him for a response when Isidore's voice speaks in his right ear:

"Captain? Found something, I think."

Kinnard glances up at the center screen. It displays the real-time image from Ortega-Christ's suitcam, caught in the luminescent oval of his helmet lamp is a closed rectangular hatch. "What have you got?" he asks.

"Entrance hatch to Arm Two, Captain." Kinnard is mildly surprised; while he and Peter were talking, Isidore must have left the command deck and gone back down the axis passageway to the carousel connecting the hub to the argosy's three rotor arms. "Just tried to open it, but jammed shut it is."

"Jammed?" Kinnard's brow furrows. "You mean the handle doesn't work, or the button?"

"Neither one. See?" Isidore's arms come into view. His gauntleted hands grasp the lock lever in the middle of the hatch and twist it: first clockwise, then counter-clockwise. The lever doesn't budge a centimeter either way. "Then tried the button. Look what happens...."

His right hand moves to a panel on the bulkhead next to the hatch. His finger pushes a red button; the hatch remains shut, but a message appears on the panel's tiny LCD screen.

"Zoom in on that, please," Kinnard says. A moment later the LCD fills the center screen:

#### ERROR 10

##### ENTER CODE A-300

Something cold slithers down Kinnard's spine.

"Code A-300?" Peter is confused. "Mean what?"

Without looking away from the screen, Kinnard snags his fingers at his navigator. "Jon! Give me a holo cutaway of the *Hershel*, Arm Two!" As Caswell-Christ moves to comply, Kinnard turns to the chief engineer. "Cayenne! Get ready to download files from *Hershel's* primary memory buffer! Prefix code alpha three hundred!"

Peter is confused. "Marion, what are you—?"

"Hush." Kinnard begins entering a memorized nine-digit string into his wristcomp. "Stand by to transmit counter-code on my mark...."

"No can do, Captain," Cayenne says.

"What?"

Cayenne is just as bewildered as Peter and Jon. "Can't download or transmit," she says. "Still don't have telemetry with the *Hershel*. Can't download anything until we —"

"Damn!" In his rush, he has forgotten that the comlink between the two ships is still dead; the only operational radio channels were those with Isidore and the 'bot. He forces himself to calm down. "Isidore, leave that section and go topside, *mucho pronto*. Get the AI back on-line, then reactivate the com panel and open an S-band channel to *Intrepid*. Move!"

"Copy that," Isidore says. The center screen blurs out-of-focus as he pivots away from the Arm Two hatch and begins moving back through the carousel to the hub.

"What you find?" Peter asks as he follows Kinnard to the map table.

The holo tank has already lit, displaying a rotating translucent diagram of Arm Two that Jon has summoned up from *Intrepid's* AI library subsystem. "Something important, now?"

"Damn straight, it's something important." Kinnard traces the arm's six levels with his forefinger, starting at the top: 2A/Labs; 2B/Life Support and Logistics; 2C/Hydroponics; 2D/Hydroponics; 2E/Sickbay...

"Briga," he murmurs as his finger reaches the lowest level of the arm: 2F/Hibernation.

Peter stares at the holo. "Last three people are down there, you think?"

"Think so, yeah," Kinnard nods his head. "They barricaded themselves inside Arm Two, disabled the locks, then put themselves in biostasis. Decided to wait it out until someone came to rescue them."

"Then survivors there might be, *si?*"

Kinnard glances at the doctor and smiles. "Possible," he says, then his smile fades. "But Error 10 means that a main hatch has been disabled from the inside. The A-300 code is a security lockdown...it means that the computer can't correct an AI error unless a Pax captain enters his password. No one else aboard *Hershel* would know it but Captain Baylor...and I'm the only one aboard *Intrepid* who knows the counter-code."

He glares at the holo once again. "If Steven Baylor was one of the survivors and he locked himself in Arm Two on purpose, then that means he was counting on someone finding him. And if that's the case...."

His voice trails off. "So you're saying what?" Peter asks.

"That he left us a message," Kinnard answers.

3.12.2070  
0331Z

#### HYGENS BASE

Barnes stills stands outside the main airlock when DeSoto and Simms arrive at the airlock. As the two officers emerge from the darkness into the floodlighted perimeter, Sweet' Pea automatically raises her rifle arm into firing position: a twitch of her right index finger, and the soft outer garment of their p-suits would be shredded by razor-sharp flechettes fired at 500 rounds per second.

Slick Nick stops cold in his tracks, but the colonel keeps walking toward the dome. "Stand down, Corporal!" DeSoto snaps, and the gun-arm's muzzle immediately falls. "Didn't you hear me tell Sergeant Clay that we were coming over?"

"Yes, ma'am." Sweet' Pea's expression can't be seen outside her CAS armor, but DeSoto imagines that the corporal is properly red-faced. "I'm sorry, Colonel. You startled me and...."

She doesn't complete the thought, and DeSoto doesn't push her. Bravo Squad is on edge and rightfully so, considering what they found inside the habitat. On the whole, DeSoto is grateful that Barnes is high-strung right now; at least it means she's alert.

"Don't worry about it," DeSoto says. "No harm done." She looks around. "Where's Smoker? I thought he was out here with you?"

"Corporal Hernandez has cycled through the airlock," Sweet' Pea replies. "Sergeant Clay asked him to come inside to assist with..." Again she hesitates.

"With what, soldier?" DeSoto demands.

"With the clean-up, ma'am." Another pause. "I volunteered to stay outside, ma'am...to remain on guard duty."

"What's there to guard against, Corporal? There's no one here but us." "Yes, ma'am, I understand." Hesitation. "I preferred to remain at my post. That's all."

Now DeSoto understands. Corporal Patty Barnes — tough little Sweet' Pea, the PAM lifer who has stood up to the worst hazing her male squad mates could throw at her — is frightened out of her wits. She has heard all comlink cross-talk from within the base; she knows that Huygens Base is a slaughterhouse, and she has found the limits of her courage. She doesn't want to see what's on the other side of the airlock.

On one hand, DeSoto is sympathetic. Were it not for the fact that she is the squad CO, she would just as soon let Power Chuck handle the nasty business of wrapping up the corpses. Yet she also knows that, just as she can't let herself off the hook, she can't allow Barnes the luxury of distancing herself. If Sweet' Pea remains outside, then eventually her squad mates will accuse her of wimping out. Their scorn, along with her own self-doubts, will eventually tear her apart. DeSoto has seen it happen before; it almost happened to her once, many years ago.

So the colonel compromises. She points toward the airlock. "Lieutenant Simms, cycle through and assist the others with the clean-up." Slick Nick silently acknowledges her with a raised hand and steps toward the closed hatch, then DeSoto turns to Barnes. "Corporal, you'll accompany me to the AEL airlock. I want to see what the lab looks like."

"Yes, ma'am," Barnes sounds relieved; escorting her squad leader isn't as bad as picking up pieces of dead bodies.

DeSoto allows Sweet' Pea to lead the way to the Ambient Environment Lab on the other side of the habitat. The AEL is a small, unpressurized dome nestled against the pressurized habitat, connected to it by a sleeve containing the base's secondary airlock. Barnes opens the outer hatch, then steps aside to let the colonel enter the dome before her.

"You first, Corporal," DeSoto says. "Your lamp is brighter, and I'm unarmed."

Sweet' Pea says nothing to her credit, though, there is no hesitation this time. Bending her knees slightly so that the top of her bulky armor doesn't hit the lintel, she ducks through the hatch and enters the darkened dome.

The overhead lights are off; their suit lamps cast long shadows off metal benches, stools, and shelves. An island-table is in the center of the circular room. Spectrometers, microscopes, a vacuum chamber, photographic equipment, a computer terminal — DeSoto recognizes the usual apparatus one might find in a xenoscience lab.

Everything here is neat and tidy. That's the first impression that strikes DeSoto as she and Sweet' Pea make their way through the lab. Clay had told her that the main dome had been totally trashed; even bunkies had been slashed by a knife. However, the AEL seems to have been unmolesated. A rack containing flasks near the airlock door is intact; even a glass sample jar perched on the edge of the island table is undisturbed.

"No bodies here," Barnes says.

"Everyone in the science team has been accounted for already," DeSoto reminds her, pointing toward the closed airlock hatch. "They found one guy in there, but I think Ballou has removed him already."

"Yeah. OK...yes, ma'am," DeSoto hears an angry sigh over the com-

link. "I'd sure like to get the guys who did this in my sights."

Something about that jar... "I don't know what you mean, Corporal. Who are you talking about?"

A reticent pause. "You know...the googles."

DeSoto looks up at her. "I don't recall anyone saying that the Superiors were under suspicion."

A short, harsh laugh. "C'mon, Colonel...who else could it be? They're the only ones who could get out this far. And they don't seem to like the Pax very much, so...I know, who else is there, right?"

DeSoto looks at the jar again. "Some Superiors we know might disagree with that opinion, Barnes."

"Yeah, but they're good googles. I mean, they're different..."

DeSoto picks up the jar, examines it under her helmet lamp. It's empty, save for a red-brown stain on its bottom. Yet someone had marked the label in black felt-tip pen: Spec. 51/Site 12. Org. Comp. SAVE!

She bends over to flash her helmet beam across the floor. No identical stains, no spilled substances. So what happened to the sample?

"It's gotta be the googles, ma'am." Sweet' Pea's voice natters in her headset. "I know they're your friends, but..."

DeSoto places the jar back on the table. "I don't have any friends, Corporal," she says. "and don't you forget it."

"Yes, ma'am. Sorry, ma'am."

Enough of this. It's time for her princess to come out of her shell, whether she likes it or not. "Let's go," she says, turning toward the airlock. "We've spent enough time in here, and we've got a job to do."

"Yes, ma'am," Barnes follows her to the airlock.

#### AN LOG: PASS VS-29 HERSHEL EXPLORER 5.30.09/2346.01.A6Z

*A man floats as he peers into the camera lens: dark rings under his eyes, two-day beard, gray T-shirt mottled with sweat. He hovers weightless in a spaceship compartment, his right hand raised above his head, grasping a ceiling rung for support.*

"I'm John Stephen Baylor, captain of the Pax Astra argosy *Hershel Explorer*. This is a supplemental log entry, recorded in Deck 2F, the hibernation bay. It is 30 May, 2069...Pax Independence Day. God save the Queen and all that...and it is now...uh, 2347 hours Greenwich..."

*He glances past the lens. Someone out of camera range says something; Baylor nods slightly, then addresses the camera again.*

"If you're watching this, then you already know that half of my crew is dead and that all the ship's decks and compartments, save for this one, have been deliberately decompressed. The only three known survivors — communications officer Sharlee Fulkerson, ship's doctor Chang Tee, and myself — have sought refuge in the hibernation deck. Sharlee has shut down all the ship's systems except for the nuclear reactor, the backup AI system, and life support for this deck only. Once this entry is complete, Dr. Chang will place us in biostasis, in hope that a rescue party will find us before the reactor gives out and the zombie tanks can't sustain us any longer..."

*Again, an unintelligible off-camera voice interrupts him. Baylor acknowledges the speaker with a curt nod.*

"The most important thing is, do not — repeat, do not, under any circumstances — attempt to revive us until you have reached Highgate. Keep these tanks sealed until then. We don't believe that we have contracted the contagion which led to the deaths of our crewmates or those on Titan, if they are indeed..."

*He nervously wets his lips with the tip of his tongue.*

"Look, just keep the tanks shut until you reach Highgate, and only then open them under strict quarantine conditions. This is why we've — one of the reasons, at any rate — why we've voided the rest of the ship. The contagion seems to be airborne. We don't think we've contracted the contagion — the plague, the virus, whatever it is — but we can't be too careful, and...um, whatever. Dr. Chang wishes to speak now."

*Baylor moves aside. There is a momentary glimpse of the hibernation deck — three zombie tanks in the background, their lids*



open — then Chang moves into view. He looks just as exhausted as Baylar, but he speaks more rapidly.

"The contagion appears to be an aerobic virus that is native to Titan. It was brought into the ambient environment lab at Hershel Base by means of a sample of microbiological life forms discovered on the surface by the science team, from a tidal pool near the edge of the Galileo Planitia. I'm uncertain about the exact means of transmission, but I believe that members of the science team may have cycled through the APL airlock with living samples which were deliberately left unsterilized, in order to examine them more closely in the habitat's bio lab. In a rich oxygen-nitrogen environment, the life forms quickly propagated and mutated until an aerobic strain found hosts in the expedition members..."

*Chang pauses, taking a deep breath.*

"So far as I can tell — and this is highly conjectural — once the contagion is metabolized by the lungs and enters the bloodstream, it attacks the central nervous system until it finally infects the frontal lobes and motor cortex through the thalamus and pituitary glands. It gradually wipes out everything it reaches — literally rotting out the brain — but as it does so, it drives the infected person insane. Before the plague kills its victims, it drives them into homicidal seizures."

*Chang glances at Baylar, then looks back at the lens.*

"No one knew that Huygens Base was contaminated until sporadic quarrels, then fistfights, began to break out among members of the science team. At that time, two members of the ship's crew were visiting Huygens Base. Then it got worse, until..."

*He shakes his head.*

"Never mind. We now believe that they were infected with the contagion, and when they returned to the *Hershel* they brought the plague with them. By the time we lost contact with Huygens Base, the infected *Hershel* crewmembers had killed one uninfected member of our party, and the three of us sealed ourselves in Arm Two. We then —"

*An angry voice from off-camera stops Chang. He glances to the left, then reluctantly moves aside, allowing a third person to enter the camera field: a bespectacled young woman, sweaty blond hair plastered against her face, features distorted by her close proximity to the camera.*

"Look, bottom line...every one down there is dead!"

*Baylar's arm comes into view, as if to grab Fulkerson's shoulder.*

"Fuck you, lunatic finish!"

*The captain retreats.*

"I just wanna say... I just wanna say...fuck you, Captain! I just wanna say, I don't believe we left six guys...six real good guys, I loved them all, but we left them down there to fuckin' die because these assholes here...these assholes here...and then they blew out the airlock when they could have saved Tim, but they just left him out there and —"

*Chang and Baylar try to pull Fulkerson away, but she struggles against them as she screams at the camera.*

"Get away from me, you prick! I said I didn't wanna transmit because I didn't wanna — OK? I just don't wanna die, that's all, I just don't wanna —"

*Chang gets Fulkerson in a headlock, and hauls her away. A long pause, then Baylar reappears.*

"I don't think she's infected...she's just under stress..."

*His eyes dart aside for a moment, then he jaunts away from the camera. For several minutes there is nothing to be seen except the open zombie tanks. Scuffling sounds in the background. A high-pitched scream. Silence. Then Baylar reappears.*

"Look, whatever you do, you can't let this thing get into the inner system. If it finds its way back to the Pax, or even Earth, then everyone is screwed. This sucker thrives on oxygen and eats brain cells like candy. Just..."

*He stops, glances away for a moment, then looks back at the camera.*

"Just use your best judgment. I want to live, but...use your best judgment."

*His eyes rapidly blink, forcing back tears.*

"Caitlin, Robert...I love you. *Hershel Explorer* signing off."

*Blank screen.*

3.12.2070  
0347Z

#### PARN INTREPID

"Huygens Base, this is *Intrepid*, do you copy? Over."

Static. Jon Caswell-Christ waits a few moments, then tries again, adjusting the gain on the S-band transponder. On the third attempt a male voice comes over the comlink: "*Intrepid*, this is Huygens Base. We copy."

Kinnard hovers above the comm station. "Huygens, this is Captain Kinnard. With whom am I speaking?"

"A slight pause, then: "*Intrepid*, this is Sergeant Clay."

"Sergeant Clay, we've been trying to get through to *Excelsior*, but there isn't any response. Can you tell me where Colonel DeSoto is right now?"

A longer pause, then DeSoto's voice comes over the line: "Captain, this is DeSoto. I'm here at the base with my people. There's no one aboard *Excelsior*. Is there a problem?"

Kinnard and Caswell-Christ trade looks; this is not good. Kinnard hesitates. "Yes, Colonel, we may have a problem, but I have to speak to you in private. Use channel B on the S-band transponder. Over."

A few moments pass, then DeSoto's voice returns: "Affirmative, *Intrepid*. Channel B on the S-band in sixty seconds. Huygens Base out."

Jon switches the comlink to the new frequency as Kinnard pushes himself over to his seat and straps in. He checks the chronometer: forty-five seconds to go. DeSoto must be looking for some place in the habitat where she won't be overheard by anyone in her team. At least he hopes she is...

"Tell her what, Marion?" Peter Webster-Christ has followed him to his chair; he floats upside down above Kinnard, clutching the ceiling rail with his feet.

Kinnard glazes up at his friend. "The truth," he says. "Then we figure out where to go from there."

Peter slowly nods his head. "May not have caught the contagion," he says, "even if they've been breathing the air. Viruses cannot survive very long outside a living host. Everyone on Huygens and the *Hershel* has been dead for a long time."

"Most terrestrial viruses, you mean." The contagion had evolved on Titan, a world whose environment is radically alien from Earth's: colder surface temperature, higher pressure, different atmospheric composition. It was a miracle that any form of life had developed there in the first place, let alone one which could propagate so quickly in an oxygen-nitrogen environment, spawning such lethal mutations. And yet it has...

He looks up at Peter again. "Are you willing to take that chance?" he asks.

The physician says nothing. Kinnard glances at the chronometer, then glances over at the chief engineer. Jon silently nods to him, then Kinnard prods his jaw again. "Huygens Base, this is *Intrepid*. Colonel DeSoto, do you copy?"

"I hear you, Captain. What's going on up there?"

"We think..." Kinnard hesitates. "We think we know what killed everyone on Titan. Ditto for the *Hershel*." He stops again. "Before I tell you, I've got to know one thing. Have you or any members of your squad opened your suits after cycling into the habitat?"

Her response is prompt. "Affirmative, *Intrepid*. The first three people inside popped their lids after they came through the airlock. So has everyone else. The base is completely pressurized."

Kinnard purses his lips. "Does that include everyone in the landing



party, Colonel? Who were the last ones to go into the base?"

"Lieutenant Simms, Corporal Barnes, and myself were the last members of the squad to enter the base. Barnes opened her suit after she and I cycled through the AEL airlock five minutes ago. Simms and I have removed our helmets. Everyone is breathing the air inside the base. It smells bad, but that's all that's wrong with it."

"Dear God," Peter murmurs.

Kinnard hunches forward in his chair. "You said you came in through the AEL airlock?" He exchanges a dire look with Peter. "Did you discover anything unusual in the lab while you were in there?"

Before she can respond, Peter patches himself into the comlink. "Colonel, this is Peter Webster-Christ, ship's physician." Kinnard notices that he's deliberately avoiding Superior patois. "Were there any biological samples missing from the AEL?"

For the first time since she came on-line, there is a long pause before DeSoto replies. When she does, her voice is even harder than usual. "Look, whatever game you guys are playing, cut it out now. You're throwing questions at me, and when I give you answers, you throw more questions. You still haven't answered what I asked you. What's going on up there? Over!"

Kinnard looks at Peter, then at Jon. Their large blue eyes are locked on him, the expressions on their tattooed faces unfathomable. Just a few moments ago, he had said to Peter that he would tell DeSoto the truth. Now that moment had come, and all he wants to do is lie.

"*Intrepid*, this is Haggens Base. Kinnard, what aren't you telling me?" He wishes he could tell her that she's safe, that Bravo Squad is safe, that they can bag the bodies and load them into *Excelsior's* cargo bay and come straight back to *Intrepid*. Ten bottles of wine await them in the ship's stores; drinks on the house, gentlemen, while we refuel at Saturn. Then everyone goes below and snuggles back into their zombie tanks. Nine months later, everyone arrives at Highgate. Mission accomplished.

That option is no longer available.

Kinnard takes a deep breath, silently curses himself and his job. Then he gets back on the comlink with DeSoto.

He tells her the truth: everything that he has learned, and all the horrifying ramifications of that knowledge. As they speak, Cayenne transmits a priority message to FLTCOM.

Long before they receive a reply, they've already agreed upon a solution.

3.12.2070  
0531Z

#### PARN EXCALIBUR

From her seat in the cockpit, DeSoto watches as Slick Nick carefully maneuvers the shuttle toward *Intrepid's* docking cradle. The frigate looms above them, its wing lights catching the Royal Navy griffin-and-sword crest painted next to the airlock. Through a port-hole next to the hatch, she catches a glimpse of a crewman silhouetted against the warm light within the ship.

"Two meters...one-point-five...one meters," Slick Nick says. "Probe contact light...."

There is a soft thud as the docking collars connect, then a sudden jar as the cradle captures the shuttle. "We're in," the pilot says, his hands snapping toggles on his console.

DeSoto gives him a wan smile. Through the comlink, she can hear the mingled voices of her troops. In past operations, there have always been excited shouts, even the occasional war-whoop. The operation is over, and everyone has returned safely. Now there is only a collective, weary mutter. This is a mission whose outcome no one wants to celebrate.

"Roger that, *Excelsior*. Welcome back." Kinnard's voice comes over the comlink. "Before you prepare to disembark, please be

advised that we have received new orders from FLTCOM regarding your mission status...."

The voices on the comlink die off as the soldiers in the back of the shuttle hear him. Slick Nick groans softly as he closes his eyes. "And here I was, hoping for a medal," he says softly.

DeSoto doesn't look at him as she unbuckles her harness and pushes herself out of her seat. She alone knows what's going to happen next, and she hates herself for her complicity. "I'm sure your courage will be remembered, Lieutenant," she says softly.

Kinnard's voice continues. "In the interests of safety, both your own and your crew, FLTCOM has asked that you be quarantined inside the shuttle for the next six hours."

Outraged shouts over the comlink. "Six hours!" "What the hell are we supposed to do for six hours?"

"Hey, man, all I wanna do is get out of this goddamn...."

"I don't believe this shit," Simms says. The pilot looks straight ahead, staring at *Intrepid* as if he can see Kinnard through its fuselage. He doesn't notice that DeSoto has silently moved above and behind his seat.

"The quarantine period will last while we fly through Saturn's inner system," Kinnard is saying. "We'll release you from the shuttle just before we enter the upper atmosphere for our refueling run. I'm sure you'll want to witness this, so we've reserved the wardroom for you."

Raising her hands, DeSoto notices that they're trembling, slick with sweat. She holds her breath and wills them to be still, then she reaches down to Simms.

"And, although it's against regulations for liquor to be aboard a Navy vessel, we happen to have a small supply of lunar wine in our stores...."

DeSoto doesn't hear the rest. "It's been an honor to serve with you," she whispers under her breath, then she swiftly wraps her left arm around his neck and grabs his chin with her right hand.

Slick Nick has no time to react before she breaks his neck.

Kinnard keeps talking, telling necessary lies to her team, as she cradles Simms' head against her chest. She cries softly, feeling his muscles reflexively twitch, his heartbeat gradually subsiding, until at last he is still.

Bravo Squad is still hitching about being cooped up inside *Excelsior* for another six hours when she finally unstraps the pilot's body. DeSoto gently places him in her own couch and secures him, and takes another moment to close his sightless eyes. Then she climbs into the left seat and switches the comlink to the same private frequency she had used on Titan.

"It's done," she says.

There is a short pause, then she hears Kinnard. "I'm sorry, Colonel," he says. "I wish it didn't have to be this way, but I—"

"Shut up. I don't want to hear it." Strangely, she feels no anger, no remorse. She simply feels dead inside. Her eyes flit across the airlock control panel. It tells her that the hatch is secure and cannot be opened by anyone within the aft compartment; her team is trapped. "I'm keeping my side of the agreement...now you keep yours. Understood?"

"Understood, Colonel. We'll keep our side of the agreement. I promise."

Almost a minute goes by — enough time for DeSoto to reflect upon all that has gone before, and all that is yet to come — before the captain's voice comes over the comlink again, perhaps for the last time. "Is there anything we can do for you?"

She almost laughs out loud. She's tempted to tell him that, yes, she would be delighted if he and his goddamn google crew would go straight to hell. Instead, she surprises herself with her calm reply.

"Music," she says. "Classical...I don't know: Beethoven, Bach, Holst, Glass. Whatever you've got, just put it on for me and my crew. Give us something to listen to while we wait..." She swallows. Her throat is raw. "Then leave us alone."

Then she switches from the secure channel to the main band, where she can hear the voices of her teammates. After a few moments, the first movement of Beethoven's "Fourth Symphony" drifts over the comlink.

DeSoto pushes the seat back to a reclining position, closes her eyes, and begins her last mission.

DATE: 0614Z 12 MAR 70  
FM: CHNAVINT CLARKE CO  
TO: PRIME MINISTER  
SUBJ: KRONOS  
CLASS: TS

1. (TS) UPDATE: PRIORITY ONE SCRAMBLED PADSS TRANS-  
MISSION RECEIVED 0535Z MAR 12 FROM PARN VA-145, FRIGATE  
INTREPID. CAPTAIN KINNARD REPORTS RETURN OF PARN VA-  
145, SHUTTLE EXCALIBUR, FROM TITAN. ALL MEMBERS OF  
PAM BRAVO SQUAD REPORTED IN SATISFACTORY CONDITION  
FOLLOWING PROLONGED EXPOSURE TO POSSIBLE BIOCONT-  
AMINANTS IN HUYGENS BASE. BRAVO SQUAD QUARANTINED  
WITHIN SHUTTLE.

2. (TS) EMERGENCY MEETING OF FLTCOM, CHNAVINT, AND  
ROYAL SURGEON HELD AT 0500Z MAR 12. CONCUR WITH  
ASSESSMENT PROVIDED BY CAPTAIN KINNARD: TITAN CON-  
TAGION PRESENTS CLEAR THREAT TO SAFETY OF INHABITED  
SOLAR SYSTEM AND PAX SECURITY. APPROPRIATE MEASURES  
SHOULD BE TAKEN IMMEDIATELY TO PREVENT POSSIBLE  
SPREAD OF THE CONTAGION.

3. (TS) INTREPID HAS BEEN ORDERED BY FLTCOM TO ELIM-  
INATE ALL POSSIBLE SOURCES OF CONTAMINATION.

4. (TS) UNDER THESE CONDITIONS BRAVO SQUAD CONSID-  
ERED EXPENDABLE.

5. (TS) MAIN AI SYSTEM OF PASS VS-29, ARGOSY *HERSHEL  
EXPLORER*, HAS BEEN REPROGRAMMED TO RETURN SHIP VIA  
AUTOPILOT TO ASTEROID BELT, UNDER ESCORT BY INTREPID.  
UPON ARRIVAL, SURVIVING VS-29 TEAMMATES WILL BE  
RETRIEVED AND BROUGHT ABOARD VA-145, WHERE THEY  
WILL REMAIN IN QUARANTINED BIOCASSIS UNTIL INTREPID  
RETURNS TO HIGGATE. VS-29 WILL THEN BE SCUTTLED.

6. (TS) AT 1200Z MAR 15 NAVINT WILL LEAK INFORMATION TO  
NEWS MEDIA FOR PUBLIC CONSUMPTION, RE: FATE OF TITAN  
EXPEDITION, INTREPID RESCUE MISSION, BRAVO SQUAD.  
INFORMATION WILL REPORT THAT ONE HUNDRED PERCENT  
CASUALTY RATE AMONG THOSE EXPOSED TO LETHAL CON-  
TAGION DISCOVERED ON TITAN. INFORMATION WILL ALSO REPORT  
THAT ALL MEMBERS OF BRAVO SQUAD PERISHED ON TITAN.

7. (U) RECOMMENDATIONS: HER MAJESTY ISSUE POSTHUM-  
OUS MILITARY COMMENDATIONS TO ALL MEMBERS OF  
BRAVO SQUAD AND CIVILIAN COMMENDATIONS FOR MEM-  
BERS OF TITAN EXPEDITION, INCLUDING PENSION FOR SUR-  
VIVING FAMILIES. ALSO RECOMMEND THAT HER MAJESTY'S  
GOVERNMENT PLACE TITAN OFF-LIMITS TO ALL FUTURE  
LANDINGS BY PAX VESSELS (MILITARY, COMMERCIAL, AND/OR  
SCIENTIFIC) UNTIL MORE KNOWLEDGE OF TITAN CONTAGION  
IS ACQUIRED.

END

3.12.2070  
1340Z

#### PARN INTREPID

And now here is Saturn — the old god, the guardian of time, Kronos — seen not as a distant ringed orb but as a flat, banded planet lying beneath a dark sky. Cumulus thunderheads of off-white amon-  
ium scurry across pale reddish-orange cloudtops which shine faintly from within, caused by the storms of metallic hydrogen and helium that perpetually rage in the trackless depths above the planet's core. A planet in constant cyclonic motion: serene from the distance, a spiraling vortex up close.

Intrepid races through the uppermost reaches of Saturn's atmosphere, its main engine driving it toward the cloud band just above the equator. The airbrake shield already glows with friction; the angelic

figurehead has gained a halo. Behind the shield, hatches along the engine module are already open, ready to scoop the precious helium-3 into the ship's reserve tanks.

Within the command deck, the teammates are strapped into their couches, feeling the mounting acceleration as it gradually pushes them further into the cushions. Jon Caswell-Christ's hands are locked onto the helm yoke; beneath the tattoos on the backs of his hands, his skin is white with the strain of keeping the ship on course. Behind him, his first-wife Cayenne is staring straight ahead; like Jon, her MINN-linked eyes are filled with electronic hieroglyphs as Intrepid's AI feeds process data straight into their cerebral cortices.

Everyone else is entranced by the view through the forward windows. Here is the most awesome sight of all: Saturn's rings as viewed from below, rising from the vast horizon as an impossibly huge arch, a gateway to eternity. Massive clouds are dwarfed into insignificance by this seemingly solid structure. Weak sunlight filters through the Cassini division between the B and A rings, but everywhere else the spinning snow, hail, and icebergs of the rings form an immense rainbow that towers above them like the scimitar of the gods.

"Do you see?" Kinnard says softly.

"Yes." The woman's voice in his ear is quiet. "I see it...oh my God, I see it..."

Several alternatives had been made available to DeSoto. She could have waited on Titan for the missile that Intrepid sent down to Huygens Base: at ground-zero, she and her team would have instantly, painlessly vanished within the one-megaton nuclear flash that consumed the base. Or Intrepid could have destroyed Excalibur with a ship-to-ship missile after the shuttle had ascended to orbit; all she would have had to do was close her eyes when the missile homed in on the shuttle, and death would have come to her as a last-second moment of panic, nothing more. She might have even performed the job herself, once she had killed her pilot, she could have opened all the hatches and voided the shuttle, blowing herself and her teammates out into space.

This was the option she had chosen.

Kinnard tries to find the right words, then realizes that anything he might say would be trivial, perhaps even insulting. "Are you ready?" he simply asks.

A short pause. "We're ready." A moment passes. "They know, Captain. I've told them."

He shuts his eyes. Unexpected...but perhaps it shouldn't be. In the end, DeSoto wouldn't lie to her people, however comforting that lie may be. They had earned the right to be told the truth.

"I understand, Colonel," he says. "I hope they do, too."

No response. The equatorial cloud band moves closer, its pastel swirls and eddies more discernible than they were a few minutes ago. Down there are easterly winds in excess of two thousand kilometers per hour. Around him, he can hear his crew murmuring to one another as they make ready for the lowest point of the dive.

He glances over his shoulder at Isidore. The first officer's hand is poised over a toggle switch on his console. He nods once, his face expressionless. The executioner is ready to drop the trap-door.

"Do it," DeSoto says.

He doesn't feel any motion as the docking cradle releases Excalibur from its berth, nor does he look up at the multiscreen to watch the shuttle as it falls away from his ship, beginning its long, swift plunge into the maelstrom below. An annunciator rings, signaling the shuttle's departure, but Jon quickly silences it.

Kinnard swivels his chair around until he cannot see the windows, deliberately ignoring the last sight of Kronos. From his pocket, Kinnard pulls out his copy of the *Enabrijat of Omar Khayyam*, which he had been reading in his cabin during the long journey from Titan. He opens it to a page he had bookmarked earlier, and silently rereads a passage written by a Persian astronomer in the 11th century:

*Up from the Earth's Centre through the Seventh Gate  
I rose, and on the Throne of Saturn sat,  
And many Knots unravel'd by the Road;  
But not the Knot of Human Death and Fate.*

"Let's go home," he says to no one in particular. ☐

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# THE POLITICS OF PNEUMATIC TIMES

BY ERIC T. BAKER

*Illustration by Gary Freeman*

SUSAN GIBSON IS WORKING ON THE CONCRETE FLOOR OF HER CELL because the warden won't allow her a table. She is sitting cross-legged, hunched over a three-month-old issue of *The Ladies Home Journal*. It is evening. Supper has come and gone, but the dim gas jet is still hissing away inside its cage by the cell's arched ceiling.

Pushing the wooden cuff of her gray prison gown higher on her pale forearm, Susan lugs the iron slat she has pried from her bed across the top of the title page, just under the header of April 3, 1913. She scores the paper with a fingernail grown unaccustomedly long, tracing the straight line created by the slat, and then carefully tears the cheap paper at the line.

Last week, when Susan was arrested at the Women's Freedom rally and placed here in the solitary wing of New York City's Central Criminal Lock-Up, she had asked for paper and pens. These had been denied. She had asked for newspapers; the warden had sent her a stack of magazines, months old and filled with recipes, housecleaning tips, and corset ads. The matron who delivered them had smirked

while sliding the mass-printed insults through the slot in the iron-ribbed door.

Susan measures her newly torn strip against the lines of the page from *Good House Keeping* that she uses as a ruler. She hadn't wasted her breath asking for a real ruler, much less a protractor or a slide rule. She has another magazine page and the proportions of its layout lets her approximate the angles she needs. She does the calculations for the piping's diameter and spacing in her head, knowing that she is making mistakes and wishing for her sister Rebecca's gift of mental computation.

With the strip of paper now the proper length, Susan rises and takes it to the plan. Evening is her favorite part of the day in the Lock-Up, cool and

quiet here below the summertime city. Most of her work is accomplished now, and again in the mornings. Afternoons are lost to the heat that manages to creep down from the stone edifice above. At those times, lying undressed on the hard bed, Susan considers offering to design the city's ventilation system their prison needs. The improvement in the building's smell alone would be worth the effort.

The paper in one hand, Susan takes up her glue with the other. She saves some of the gruel from breakfast each day, mixing it with water from her jug to form a paste for sticking the torn strips to the hallway wall. The matrons can't see the plan unless they come into the cell, something they have shown no desire to do.

At first glance, Susan's painstaking work would appear to the matrons as nothing more than an ugly, abstract collage, gray newspaper against gray walls. Susan would have to explain it to them before they could see what she sees: a plan for fitting the recently purchased headquarters of her movement, the National Organization for Women's Freedom, with the pneumatic mail system that it needs. This is the third such plan she has drawn up; it seems she only has time to work on them while she is in prison. This will be the third one that won't leave when she does.

Susan is judging the fit of her new "air line," when she hears the footsteps coming down the corridor. Perhaps she has lost track of time, but it seems early for lights out. Also, there are too many steps, and too heavy. Some sound in time, like marching. Susan drops the paper strip and hurries to hide the slit under her dun mattress. They may not be coming here, she thinks. There are others in this hall.

But it is her the matrons usually come to see.

She is sitting on her bed with her hands in her lap when the spy hole in the door is slid open with a thud, and the head matron's square face looks in at her. Then a surprise: The matron's face is replaced by a male one, dark-haired, thick-lipped, and clean-shaven. The man looks over Susan from head to foot and back, then turns away. "Give her the clothes," he tells someone, and then he looks back to Susan. "You have five minutes to dress, and then you leave. In whatever you have on." He slams the spy hole shut.

Susan hurries to the bundle that tumbles through the food slot, already unbuttoning her prison gown, even though she knows that she is in terrible trouble. But the garments are her clothes, after all, taken from her when she was arrested. She scoops them up like long lost friends. The white blouse and the red coat and the scandalous black slacks she had been wearing as she addressed the crowd on the steps of City Hall. They are all proof that she once did have a life outside this cell.

The bolt on the door is rasped back for the first time in a week, and the door itself is pushed open as Susan does up the last of the jacket's buttons with a trembling hand. She grips the hand to still it, turns to face the doorway, and hears the matron order her out.

There are six people in the dark, still hall. The head matron is there with her thin assistant, but Susan gives them hardly a glance. It is the men she stares at, fighting to control her confusion and her fear.

They are armed. That is the first thing that she notices. These four big men in their black uniforms of creaking leather are all carrying air guns. The one in front has only a pistol, and that in its holster, but the other three have the stub-bodied carbines (light and short enough for one-handed use) that she has watched being wielded by riot police. Her back twitches at the memory of the rubber slugs that had knocked her flat during the rally in Washington. Who are these men that the warden allowed them to bring guns into a cell block?

Police, that much is certain, but definitely not Department of Corrections wardens or City of New York police officers. Why had they come for her? Hold out your hands, the one in front says. She looks at the manacles he has ready, then up at his face, and she recognizes him. He'd been in a suit, standing behind Secretary of Transportation Thomas Carter at the congressional hearings on tube ridership, watching the crowd instead of the proceedings.

"You're air police," Susan says, trying to catch the man's eyes as he looks the heavy metal chains around her wrists.

"Special Security Branch," he says, a little of his Italian heritage still audible in the way he rolls the r's. "I am Colonel Dedrick, and

you are now in my custody. My concern is your safety and not your dignity, but if you remain calm and obedient, then it should be possible to preserve both. Do you understand?"

"I understand," Susan says. She would behave or they would wrap her up and carry her.

"You may lead us to the tube platform now," the colonel tells the head matron. Susan can see in the matron's stiff face and steady eyes that she is very angry with this man, but she obeys him. They go in silence, the colonel holding Susan's arm and his men surrounding them.

The solitary wing is already below street level, but the matron adjusts the valves so that the air-driven elevator, really a tube car run up and down, descends four more levels before depositing them on the echoing, tube platform. From their depth, Susan knows these are the civil defense tubes, the private system of pneumatic cars that links the city's police stations. It is on this system that she and her fellow ralliers were brought to the Lock-Up.

**THE CAR THAT WAITS FOR THEM, GUARDED by another armed air policeman is not, however, the spartan coach she has ridden in before. Even from the platform, she can see padded seats and wood-grain walls. Susan tries to find comfort in the fact that her last ride will be a comfortable one.**

"Thank you for your cooperation," the colonel tells the two prison women as his men move out to secure the platform.

"This is not the end of this matter," the matron says.

"As you say," the colonel agrees, but he is already leading Susan onto the platform and toward the car, almost dragging her with his longer strides. The inside of the car is lighter than the gas-lit platform, and Susan is still off balance and a little blind as the colonel thrusts her onto an upholstered bench and settles in beside her.

One of the policemen dogs the door, and the car is immediately underway, the chains moving it down the tracks to the proper tube opening. Inside the car, everyone seems to be holding their breath, until there is a bump and a hiss and the car presses them to the seat backs as it accelerates. The police visibly relax. Susan knows better than to ask where they are going, but she decides to risk a question. "Batteries?" Public tube cars use either gas or battery lights.

The colonel glances from her to the lights. "Yes."

Susan nods. "I read a proposal for running conducting strips down the tubes, putting generators in the pump stations, and then sending the current down the strips." Electric lighting is one of the improvements that Susan wants for the organization's headquarters. "I thought if any place had tried it, it would be down here."

"The current falls off too quickly." The colonel looks as dismissive as the rest of the Women's Freedom Board did when she brought up the subject of wiring their headquarters. "We would have to install generators every few hundred feet."

"The proposal was to use an alternating current. Step it down on the cars."

The colonel doesn't answer her immediately. He is looking at her face, his brow wrinkled. "Carter warned me you were different," he finally says.

"The secretary?"

"Yes."

"Tell him I'm flattered he remembers me." The force pressing them to the bench fades, then is suddenly replaced by a tug forward as the air pressure building up in the tube in front of the car begins braking them.

"You can tell him yourself in a few minutes." The colonel allows himself a smile as he watches Susan blink at the news.

"You're taking me to see the secretary of transportation?" Susan asks, and the colonel's smile immediately fades. "Why?"

"That's for the secretary to tell you," the policeman says, and Susan feels her hand shake in the chains. She holds it in her other for the last minutes of the trip.

Another platform, and another air elevator. Susan doesn't recognize this place, but she doubts that it is a police station. Everything smells new and looks newer. The elevator doors open on a paneled hallway with oak doors and brass plates, and Susan still doesn't recognize the building until she is led through the door of an office whose brass plate says, "George Estes, Eastern Region Manager." She recognizes Estes' name. The air police have brought her to the recently opened Grand Central Station, the new headquarters of the eastern division of the Department of Transportation.

Beyond the door, a male secretary comes to his feet behind his big, black desk. Colonel Dedrick pays him no attention, but motions Susan into a leather chair, then goes through the double doors to the inner office. Susan smiles at the secretary, who has not sat back down, and who appears to be sweating from more than the heat. Susan notes the array of tubes behind him and asks, "Do you have a central sorting room, or do you do it by floors?"

"What?" The secretary, whose desk plaque identifies him as Ford Jenkins, looks completely uninterested.

"Your mail tubes. Do you have a central room for sorting your mail, or do you do it on each floor?"

"Centrally. We have a central mail room for in-house and out-going mail." Ford sits down, taking a handkerchief from his pocket.

"What about sensitive documents? Do you have a second system, or do you use lock capsules?" At the Lock-Up, Susan had feared she was being taken to be killed. This fear has faded, but she still wants to think about anything besides what is going on behind those doors, and this relates to the fight she and Margaret Bacall are having. Susan believes all the organization's members are sisters in the struggle together. She wants a central mail room with lock capsules used for those rare occasions when the officers have something sensitive to relate. Bacall agrees that they are all sisters, but the organization has never had a plan that didn't leak to the police. She wants a separate set of tubes to let the officers communicate directly.

"We have a manager's network for priority documents," Ford looks at the air policeman a little desperately. Susan's escorts seem more at ease in this building, but they are keeping a steady watch on both sets of doors. If they are listening to Susan's questions and Ford's answers, they show no sign of it.

"Does it really see that much use?" Susan's tone makes it clear she's skeptical. "Don't the managers mostly just use it to brag about their mistresses and their dogs?"

"I don't—" Ford looks at the chains on her wrists and then at her face. "This can't be any of your business," he says, although his voice lacks conviction. Before Susan can frame a reply, however, Colonel Dedrick responds.

"They're ready for you," he says, taking a key from his pants pocket. He pulls her to her feet, then holds her wrist while applying the key to her chains. She is 5 feet and 6 inches, and her forehead just reaches his shoulder.

"Are you going to wish me luck?" Susan asks him.

"You'll need more than luck," the colonel tells her, "and it won't hurt you any to show a little respect."

"As you say," Susan says, hiding her nerves behind a smile that can't be described as respectful. Colonel Dedrick ignores it, shifts his grip from her wrist to her arm, and leads her through the double doors into the inner office.

More men are waiting inside. The closer you get to power, the more men you find, Susan thinks. She'd almost choked on them in Washington, there had been so many. She recognizes all three of these.

Estes has surrendered the chair behind his desk to Carter and is standing by the row of curtained windows. Carter has picked up a file and is pretending to read it. The third man is sitting on the leather couch, looking curiously at her over his lit cigar. He is thinner and younger than the other two, and he is wearing dinner clothes instead of the expensive suits that the two civil servants have on. He and Susan have never spoken, but she has seen him in the backs of court-

rooms and to the sides of podiums. He is James Randall, the White House chief of staff and President Wilson's chief adviser.

What have I done? Susan wonders. Dedrick guides her to the single chair before the desk, and then steps back to stand by the door. Susan stands beside the chair, looking at each man in turn, waiting for one to speak. Only Randall meets her eyes, but he merely smiles and says nothing.

"You may sit down," Carter finally says. He lays the folder back on the desk and runs two fingers over his nicotine-stained moustache. His eyes look puffily to Susan, as if all the humor has been wrung from him.

"I want to know what this is about," Susan says without sitting down.

"In due time. I have some serious questions to ask you, young woman, and I shall require serious answers." Carter says this while gesturing at the chair. Susan will be thirty in December; Carter passed sixty in June. Susan bristles anyway. A lifetime of being dismissed has not made it any easier to endure.

"Who are you to require anything of me?" Susan asks. "Your thugs can arrest me, drag me about the city, hold me here forever, but they can't make me answer you." Susan has enough experience with the police to know that this is not, of course, true, but she doubts that Carter has the stomach for the measures that have produced her previous confessions.

"Miss Gibson, please," Estes says. "We are in earnest. This matter is of deadly importance."

Susan glances at Randall, who nods. "The president would appreciate your help, madam."

"The president?" Randall nods again. Susan struggles. After all, it costs her nothing to listen to them. "Well, who am I to refuse Mr. Wilson?" She sits down. "I don't suppose there are any of those cigars left?" Estes and Carter share a look.

"I don't—" Estes begins, but Randall cuts him off.

"Oh, give her one. Just hurry." They all take a moment to look at the chief of staff, surprised at the slip in his composure. It occurs to Susan that they are all nervous.

"Do you know a Mr. Matthew Kendall?" Carter asks her.

"No."

"Are you certain? He's tall, straight black hair, clean-shaven. Speaks with a Texas drawl?"

"I've probably met Texans who fit that description, but I don't remember any of their names." Susan takes the cigar Estes offers her. He has already cut the tip, and holds the desk lighter ready.

"Have you ever met this man?" Carter asks, tossing a 4-inch by 5-inch photograph onto the far side of the desk. Susan leans forward to light the cigar before reaching for the picture. The lighter is in the shape of a pump stool, the flame appearing out of the miniature smoke stack.

The picture is black and white, of a man with straight, dark hair and rounded eyes. The background is the Department of Transportation seal, and the man is wearing the beaten down look of a victim of bureaucracy. "He's one of yours then?" Susan asks.

"Have you ever met him?" Carter asks again.

"Not that I remember."

"What about Stone Station, Indiana? Have you ever been there?"

"Definitely not. Where is it?"

"About a hundred miles east of Indianapolis. No? You don't know anything about it?"

"No. Why should I?" Susan takes her first real draw on the cigar while Carter sits back and looks at Randall. The cigar is good, if you like tobacco, which she doesn't. Still, there are only so many gestures of defiance open to her.

"There is a pump station there," Carter says. "Matthew Kendall is holding it for ransom."

Susan breathes the smoke out in a lazy cloud. Carter's statement is so preposterous that she wonders how stupid they think she is. "What does that have to do with me?"

"He wants \$100,000 and he wants you to deliver it."

"Of course he does." There is very little ash on the end of Susan's cigar, but what there is, she taps onto the carpet. "Colonel, I am ready

to go back to my cell now." She gets to her feet. "You gentlemen will excuse me if I don't remain to watch you laugh at your joke."

Estes holds out an ashtray to her. His brow is creased and he looks a little pale. "We're not joking, Miss Gibson. Wish to God Almighty we were."

"Estes," Carter says. Then, after glancing at the clock on the wall, he adds, "Sit down, woman. No one here is joking."

Susan doesn't sit down, but she takes the ashtray from Estes and turns to Dedrick. "Colonel, can you tell me what this is really about? Or are you as bewildered by this comedy as I am?"

The leather-garbed policeman looks around Susan to Carter. The secretary nods and Dedrick speaks. "Approximately three hours ago, we received a message down the priority tube from Mr. Kendal, a suction engineer who has been employed at Stone Station for six months. In the letter, Mr. Kendal claimed to have seized control of the pump station during their evening shift change. By his own report, he used a false fire alarm to cause an evacuation of the plant, and then overpowered the crew in the main control room. From there, he ordered the fire teams from the plant and sealed himself inside."

Susan is shaking her head slowly back and forth as he talks, trying to imagine what these men have to gain by telling her a story like this. She can think of nothing.

"We have been able to contact no one on the scene," Dedrick continues. "The transcontinental freight and passenger tubes have been shut down at Stone Station. The mail tubes are operating, but all correspondence sent to Stone has been ignored or answered by Kendal. At this point, our only option is to take him seriously, and meet his demands."

Maybe they are not making this up, Susan thinks. Maybe one man has taken over a pump station. "What are his demands?" she asks.

"Kendal wants \$100,000, to be hand delivered by Susan Gibson by 10:00 p.m. tonight, or he will overload the boilers and destroy the pump station."

"That's insane," Susan says. "No one would cripple the transcontinental tube. Not even for that much money. It's unthinkable." Susan turns back to Carter, putting her cigar in the ashtray and the ashtray on Estes' desk. "Can't you stop him? Surely you have police on the scene. Can't they—"

"Once they realize something is wrong, yes," Carter has his hands flat on the blotter. They are red and veined, their wrists puffy. "There are scenarios, however, that do call for the evacuation and locking down of a plant. Kendal controls the mail. We can't reach the staff he's locked out. We've sent mail to the Columbus and Indianapolis stations, and they are sending couriers and reinforcements, but they're on horseback. They can't get there before the deadline."

"But I can?" Susan sits down again. She has a glimmer now; whatever this is about will reveal itself in her role.

"Kendal will turn on the passenger tube to let you through with the money. You can make it, but you have to go soon." They both glance at the clock on the wall. It's 8:50.

Susan takes time to look at the three older men again. Two bureaucrats and a politician, but they haven't ordered her to go, or even asked if she will. They're waiting for...ah. "What's in this for me?" Susan asks.

"You mean you don't have your demands prepared?" Carter says without humor, while his ugly hands rub his eyes.

"No. I told you, I've never heard of Kendal. We are not in league." Here Susan can't resist a touch of a smile. "Still, if you want a string of demands..."

"We are prepared to grant you amnesty on the charges you are being held for."

"That's a poor comfort if Kendal kills me. What about the rest of our members?"

"What about them?" asks Estes.

"I want them released too."

"Most of them will be arraigned and released to their fathers and husbands in the next few days anyway," Carter says, neatly implying Susan won't be.

"Not good enough. I want them released on their own recognition. Tonight."

"That is ridiculous. I can have them—"

"Carter." It is Randall again. He has his watch out of his pocket. "I think the president could arrange to have your followers released. The question is, will you do it?"

"One more thing. I want the ridership rules revised. Taxpaying women are to be allowed to ride the tubes without an escort, just as men do."

"No. I can't promise you that even if I wanted to, I don't have that kind of control." Carter's neck has grown as red as his hands. "Don't press your luck, young lady. We have sticks as well as carrots. If this pump station is damaged because of your inaction, then it will be years before you or any of your followers leave prison."

"If your man really blows up a pump station, it will take at least two years to rebuild. Two years of no transcontinental tube service." Susan folds her arms. "It seems to me that if I am going to risk my life for the National Transportation System, I should be able to board that system when and where I like."

"Fine!" Carter surges to his feet. "Colonel! Take this sabotage back to her cell. We're going to catch your accomplice, Miss Gibson, and we're going to string him up by his thumbs and you are going to be hanging—!" The secretary cuts himself off as the wall clock begins to chime 8:00 p.m. Carter looks from it to Susan, who rises to her feet. She feels Dedrick come up behind her but keeps her eyes on the tired man before her. Carter lets his head drop.

As the ninth chime dies away, Susan says, "If you want the ridership rules changed, they will be, particularly if you have Mr. Wilson's support."

Carter's shoulders move as he takes three deep breaths. "Fine," he says.

"When?" Susan asks.

"Before the fall recess."

"Before?" Susan asks. Dedrick has put his hand on her arm; she shakes it off. She wants women riding the tubes tomorrow, but she can see that she has pushed as much as she can. When Carter nods, she offers him her hand. The secretary takes it with a bad grace.

"The car and the money are waiting downstairs," Estes says and Susan wonders for whose benefit he is speaking. She offers Randall her hand too, and he is more gallant.

"Be very careful," the chief of staff says.

In the outer office, Dedrick's men form around her and their colonel again and the party retraces its steps to the elevator, but this time there are no chains for Susan. She fights the urge to skip.

"Do you know anything about how to fight?" Dedrick asks her as they board the elevator.

"A little."

"Kendal has six inches and fifty pounds on you." There is a hiss as the car begins to descend. Dedrick looks at her. "Have you ever fought off any of the police who tried to arrest you?"

"You mean the times I wasn't shot first?"

"Yes."

"No."

"Then you'd better have a gun."

"No."

Dedrick looks back to her, his hand held out to one of his men. "We don't want you to be a hero," Dedrick tells Susan. "Give him the money and let him go. The gun is just in case. Remember, we don't know why he wants you to bring the money."

"I've never fired a gun in my life and if Kendal finds it, it'll just make him mad." The elevator floor pushes up on her feet as it slows. "I'll be fine, colonel."

"I hope so," the policeman says, and Susan feels her neck grow warm. Despite herself, she would have liked a more positive word from this man.

The elevator deposits them in a bare concrete corridor, and a short walk lets them out onto a private platform. The car waiting in the tube, however, is an ordinary transcontinental model, about one hundred feet long and twelve wide with seating for a hundred on the reversible



benches. Two more special air policemen guard the door and another two patrol the platform. Dedrick acknowledges the salutes, makes eye contact with all his men, and then leads her onto the car.

On a bench toward the back is a leather briefcase. The colonel takes them to it and pops open its clasps. Within, bundles of \$20 bills fill the case. Susan has a moment to admire them, and then Dedrick slams the case again.

"I meant what I said in the elevator about not being a hero," Dedrick tells Susan. "Just give him the money and stay out of his way until he's made his escape."

"You don't want me to signal or something when he's gone?" It has been years since Susan has run a pump station mailroom. It would be fun to have command of all those tubes again.

"No. Help will be there soon. Just sit tight and wait for it." Sitting on the bench next to the money, Dedrick looks up at Susan, considering her expression. "Promise me," he says.

"I promise," Susan says.

"Good enough." He stands and starts to go by her, headed for the door, but he stops. "This is silly, but..." Dedrick reaches into his leather coat. They are so close that his hand brushes her jacket. Susan watches his hand and it comes out with a pen. "Because you won't take a gun." He holds it in the small space between their chests. "It's a CO<sub>2</sub> capsule set up to spray a pepper gas. Hold your breath, point the tip at Kendal, pull the clip, and run like hell."

"Run like hell. Got it." Susan takes the pen and smiles at him, then sees something in his face, and quickly steps back. There is a flicker of disappointment across the colonel's mouth, and then he smiles too and offers her his hand.

"Remember your promise."

"Better remind Carter of his."

"As you say," Colonel Dedrick says, and then he is gone, the door slammed home and dogged behind him. For a moment Susan is alone again, locked away in silence, and she is suddenly seized by the conviction that she has made a terrible mistake. She even takes a step toward the door, and then the car lurches, dropping her onto a bench. Susan stays there as chains drag the car toward the transcontinental tube.

Susan has been riding in tube cars since she was twelve. Horatio Gibson, Susan's father, used to take her and Rebecca to the pump stations whose construction he was managing. The two girls had grown up seeing the whole process from the digging of the foundations to the starting of the pumps, and they were always, always on the first passenger car to travel the new tube.

**T**HE RATTLING OF THE CHAIN DRIVE IS replaced by the hiss of building air pressure as the car is pushed through the iris gate into the tube. Lines from Grand Central Station's enormous pumps pull the air from the tube before the car, and pile air up in the tube behind the car. Acceleration presses Susan into the bench as hard as gravity pushes her down on it.

"This might be my last ride on a tube," Susan says to the empty car, and then she does something she hasn't done in ten years. Susan steadies herself against the car's floor as she puts her feet on the back of the bench and straightens up so that she is standing at a 45 degree angle to the floor.

Most Americans ride the airtubes because they are fast, convenient, and free. There is, however, a segment of the American population who cannot ride the tubes because they find them too enclosed, too dark, too frightening. And, of course, there is a segment of Americans who love the tubes for all six of these reasons. Susan is one of these last.

Her father loved using the acceleration of a tube car to play games with gravity. He also did it to impress doubters, climbing up and down the running car as he extolled the virtues of pneumatic travel.

Susan and her sister would help, tossing him his pipe lighter, pouring him cups of tea.

Now the back of the car lessens its pull, and the floor seems to tug harder at Susan as the change-over bell rings, warning the passengers to move the back rests and thus reverse their benches. The intra-city cars go slowly enough that there is no need for this precaution, but the interstate and transcontinental cars require passengers to turn around during the coasting at the trip's middle so that when the deceleration begins they don't feel pulled from their chairs.

Susan moves the briefcase and turns herself about, doing a little somersault into the new pull from the front of the car. She wonders when she will see her father and her sister again. They all know that Susan and Rebecca's politics cost Horatio his position, but he has never accused them. Horatio, more than anyone, believes in freedom to ride the tubes. He is always there to receive his daughters when the penal system can finally hold them no longer. Susan thinks of how surprised he will be when she and Rebecca come to him this time.

The final leg of the trip passes in these thoughts, and Susan keeps her nerves at bay until the last, loud hiss announces the car's exit from the airtube and into Stone Station. That is when her hand begins trembling again.

The chains clank, and then they stop. Susan waits, staring at the door to the car. Nothing happens. She has no watch, has no way to tell time except by the rapid beating of her heart, but it seems like long minutes pass while she holds the bench back to keep her hands still. A thousand things can have gone wrong. Should she wait in the car?

No. If nothing else, Susan has had enough of waiting in small rooms. She gets up, goes to the car's door, breaks the seal, and pulls the emergency release on the door. The bolts withdraw with a series of pops, and the door slides away.

In a doorway, across fifty feet of platform, a man behind a barricade is pointing a double-barreled shotgun at her. Susan recognizes him from the photograph in Estes' office; it is Matthew Kendal. "Did they give you the money?" he greets her. His excitement betrays itself in his voice, which sounds nothing like a drawl.

"Yes," Susan says, holding up the briefcase.

"And are you alone?"

"Yes."

Kendal gives a yip, and jumps to his feet. "I knew it. I knew they'd give in." He waves to Susan, letting the barrels of the shotgun drop. "Come on. We don't have much time left," Susan hesitates. "Come on," Kendal urges her. "We're not safe till this door is sealed."

It takes another moment to decide, and then Susan goes. It seems important to Kendal, and she has no wish to be the target of his shotgun. At more than one organization board meeting, Aretha Marr has held forth on how all power flows from guns. Susan always opposes attempts to turn their organization to violent methods, but she is certainly getting an object lesson in Marr's philosophy tonight.

The moment she is through the doorway, Kendal grabs the door and slides it, pushing up the lever to dog it closed. This done, he slips around her and down the hall to where he has another door open. Susan follows and watches as he spins one of a series of valves, his eyes on a line of gauges on the wall. Susan looks over the pipes, reads the labels below the valves and gauges, and can't help saying, "You're pulling the air out of the platform."

"And the tubes that open onto it," Kendal agrees, his attention focused on the gauges. He is wearing the gray coverall of a plant worker and heavy, black boots. "I don't plan for us to get caught because I underestimated the air police."

"But there's no one in there," Susan says, wondering why he keeps referring to the two of them as a unit.

"Not that you saw, but it's possible to ride the outside of a tube car, or hide inside one." He grunts as the needles in the gauges touch zero and stay there, then he turns to her. His smile is enormous. "Miss Gibson," he says, offering her his right hand, the one that does not hold the gun. "It's so good to finally have you here."

Susan puts the handle of the briefcase into Kendal's hand. "After a

week in jail, it is good to be anywhere. I didn't count the money, but it looked to all be there."

Kendal spares hardly a glance for the briefcase. "I'm sure it is," he says. "I've followed your career for a long time. The pictures don't do you justice." Susan has heard this before. Despite the bizarre setting, she finds she has nothing new to say, so she remains quiet. Kendal takes a deep breath. "Well, work first. We have plenty of time later for introductions."

Again, Kendal steps around Susan and starts down the enameled hallway. He is almost to the elevator before he notices that Susan has not moved from the doorway. He frowns back at her. "Miss Gibson, are you all right?"

"Fine," Susan says. "I thought I might wait here."

"I'm afraid that's no good," Kendal says. "I'm mostly done, but you'd better stick with me so we can get away in time." Kendal has the shotgun in the wrong hand, and narrow as the hallway is, Susan thinks she could avoid it, if there were anywhere for her to go, which there is not. So she catches up to Kendal.

**T**HE ELEVATOR TAKES THEM UP ONLY three levels and opens on another hallway. "I'm afraid this'll be uncomfortable," Kendal says as he leads Susan across the hallway and through two sets of doors into a chamber of heat and noise. Susan recognizes it immediately. Two hundred feet long, forty feet high, and filled with gleaming pipe, this is the main switching room. The air is brought here directly from the pumps overhead to be shunted to its proper destinations. Valve handles as big as Susan project from pipes whose diameter is measured in yards. The noise is from the moving air and the heat from the pressure pipes is not offset by the cold of the vacuum ones.

"It'll only be a minute," Kendal yells, bending close to her ear. He goes down the line of pipes to where an oxyacetylene torch rests on a two-wheeled hand cart. He sets down the gun and the briefcase, pushes the torch to the next giant valve, and reaches for the face shield.

Susan considers running to get the gun as Kendal lights the torch. She considers simply leaving, hiding in the maze that is the station until Kendal is gone, but she remembers Colonel Dedrick's report. Kendal has the station locked down. How far is she likely to get? So far she seems as safe with Kendal as anywhere.

Instead of leaving, Susan goes farther into the room. Kendal is bent over his work, sparks flying from the torch. Susan examines the nearest valve, trying to see what he is up to. It isn't hard. Kendal is welding the valves in place.

There is a supervisor board near the door. Susan goes to it and begins tracing the patterns it diagrams, noting the positions of the valves displayed by the indicators.

"All done?" Kendal yells from right beside her. Susan jumps. With all the noise of the room, she did not hear him approach, and she'd been too absorbed in the board to watch for him. Sorry, Kendal mouths.

"You've fused the safety relays?" Susan yells back.

"Yes!" Kendal agrees. His smile is still very wide. "Now we just have to go up to the control room, and then we can get out of here!" He has retrieved the shotgun and the briefcase. He is holding the former in his right hand and the latter under his right arm so that his left hand is free to take Susan's right arm.

In the silence of the hallway, Susan's ears ring. She turns to Kendal, pulling her arm free of his hand and grasping his coverall. "What are you doing?" she asks.

"Miss Gibson?"

"They paid you the money; they sent me here. What are you doing? The way you have the valves fixed, the system is only safe with the pumps running at idle as they are now. When you turn the pumps back up to their normal rate, the pipes won't be able to channel the

increased airflow. The system will feed back and rupture, maybe even explode."

"You are so beautiful," Kendal says, looking down happily at her hand on his clothes. Susan jerks it away. "I'm sorry. I'm not usually so forward, but I'm very excited." Kendal reaches out to take Susan's hand. "This is just the beginning, you see. With this money, there is so much more we can do. We'll bring this country to its knees."

Susan takes her hand from Kendal's grasp and takes a slow step back from him. "I think, Mr. Kendal, it would be better if you stopped saying 'we.' This is your doing, not mine."

"Yes, I'm sorry," Kendal says again. His smile has gone away and his dark brow is wrinkled with concern. "I know so much about you, but you don't know me at all." He sets the briefcase on the tiled floor and leans the gun against it.

"I've read all your writing," Kendal continues. "So I know what you think when you look at me. Another white man, another oppressor. I'm not. I'm a Cherokee. A half-breed, but with Indian blood from both my mother and my father. I grew up in the Indian Territory, and I left when the government repossessed our land. Again. We're comrades in oppression, Miss Gibson. No matter how badly this country has treated you, it has treated me worse."

"I don't doubt that's true," Susan says, although she does. Is there anything Indian about Kendal's features? She can't tell. "Still, you can't intend to actually destroy this station? It would take months to rebuild, and what would happen to the country in the meantime?"

"Chaos," Kendal says the word with obvious relish. "The transcontinental is the spine of America. When we break it, we change everything. Mail will take days instead of hours to arrive. No more lunches in San Francisco for the Wall Street crowd. No fresh fruits and meats. We'll upset their lives just as they have destroyed ours."

As Kendal says these things, Susan puts her hand into her jacket and takes hold of the pen that Colonel Dedrick gave her back in New York. "Matthew." She says his name softly, and she speaks slowly, talking to him as if he were an overworked organization member challenging her at a block meeting. "I can't defend the Registration Act to you, or any of the other Indian measures, but this is not the way to fight—"

"Half! Don't either of you move!" shouts a voice from down the hall. They do move, of course, both Kendal and Susan spinning to see Colonel Dedrick stepping out under the lights from a door fifty feet to the right of the elevator. He has changed his leather uniform for a baggy suit that appears to be made of rubber and has accordion-like folds at his joints. In his hands he holds one of the argon carbines like his men had carried earlier in the evening.

"You see?" Kendal asks Susan.

"Don't move! Put your hands up," Dedrick says, taking a cautious step toward them. Susan starts to raise her hands, but Kendal reaches instead for his gun. At this range, Susan barely hears the argon firing, but she does hear the meaty thuds as the slugs strike Kendal, knocking him from his feet and sprawling him to the floor.

But Kendal has hold of the shotgun.

Susan has mingled not to scream, although she has jumped back to press herself against the wall. When the shotgun goes off she does shriek, the noise is so loud and so sudden. Colonel Dedrick falls back as if slapped by a giant hand.

From the other side of the corridor, Kendal pulls himself to his knees. There is a large, red mark on his forehead and he wavers a little, but he is smiling. "I knew they'd try something," he says, a shaky hand grabbing the zipper of his coverall and pulling it down. "The white men always try something. They never play straight." He pulls the sides of the coverall open and taps the dull metal plate revealed. Kendal closes his eyes, sways again and says, "Help me up."

Down the corridor, the colonel is not moving. Susan becomes aware that she is biting her hand and takes it from her mouth. "Help me up," Kendal repeats, his eyes open now and staring at her. "We have to leave. The pumps will be returning to normal any minute."

"We have to stop them," Susan is surprised to find her voice. "We have to shut them down until the valves can be repaired."

"Can't." Kendal slumps off his knees and leans back against the

enamel wall. "Bomb rigged to the same clockwork that turns the pumps up. No controls, no way to stop the pumps." The man is smiling once more.

"The emergency switches in the pump rooms themselves?" Susan asks. Her hand is trembling again.

"Disabled them first of all," Kendal says.

"Damn you. Half the organization is still in that New York jail. Do you know what'll happen to them when this place explodes? Think. There has to be a way."

Kendal takes a deep breath and pushes against the wall, trying to get his feet under him. "I'm sorry about your followers, but they'll be fine. The government can't hold them all forever. We won't let them." Still on one knee, Kendal pauses and takes a watch from a waist pocket. "The controls are gone," he says. "We have to get out now. I have a way through the maintenance tunnels ready."

"The pipeline," Susan slaps her forehead. "The boilers can't run without oil."

She is two steps toward the elevator when Kendal says, "They shut down the pipeline when they got my first demands."

He makes it to his feet and stands with one hand against the wall for balance. "The reserve tanks'll run another two hours, not that the station'll last that long, Miss Gibson." Kendal holds out his hand to her. "Susan. There's nothing for it. We have to leave now."

Susan closes her eyes. Just two hours ago she was designing a pump system. Smaller, but the same components. What was she missing?

Oh.

Susan runs to the elevator, Kendal calling her name as she goes. He is laughing toward her, the briefcase clutched in one hand, as the pressurized air slams the doors closed. Susan cranks the indicator to the pump room level and pulls the handle.

How had Kendal turned up the pumps if all the controls were damaged? He had to leave something intact for the remotes in the control room to operate before he destroyed them. The oil flows from the reserve tanks. The remotes might be dead, but the physical valves had to still be operating.

Susan locks the elevator with her on the pump floor, and rushes through the double sets of pressurized doors as fast as they will allow her.

The noise and heat of the pipe room is nothing compared to the cacophony of the pump room. Giant pistons turn enormous wheels. Levers bang against stops and steam whistles through cylinders. It has been years since Susan has faced this tumult, and she can't help but stand still for a moment in the face of it. But only a moment.

In a rack by the door is a set of tools. Susan grabs a monkey wrench that is nearly as tall as she is and a quarter as heavy. She drags it by its tape-wrapped handle across the concrete floor to the spot where a black pipe feeds oil to the huge boiler from its reserve tank. She uses the wrench as a sledgehammer to break loose the valve handle from the mechanically assisted remote system, and then sets the wrench to the handle itself.

Normally, this sort of adjustment isn't done by hand. If it is done by hand, it is done by two people and not one. If it is done by one person, it isn't done by a person whose exercise in the past week has consisted solely of walking in circles around a closed yard. Despite its weight, Susan is glad of the wrench's leverage. Even with the leverage, however, Susan is breathing hard by the time the valve finally grinds closed. She drops the wrench to the floor and thinks: only three more to go.

Susan is half expecting Kendal to be waiting in the corridor when she comes out of the pump room, but she has the floor to herself. The corridor is still empty ten minutes later when she comes panting out of the second room, already exhausted and with two more pumps to go.

The third room is noticeably louder and hotter than the first two. Kendal's feedback has begun. Even with two pumps slowly grinding down to a halt as their boilers cool, Kendal's work on the valves means that the extra air can't be bled to unused pipes.

It takes Susan three tries to knock the remote arm off the valve, and as she struggles to fit the wrench on the valve handle, it occurs to her

that she is very likely giving her life to save a transportation system that she can't actually use. "Carter damn well better keep his promise," Susan says aloud, although she can't even hear herself over the din. The valve closes with painful slowness.

In the corridor once more, Susan finds not Kendal, but Dedrick. He has his carbine in one hand, and is using the other to support himself against the wall. His rubber suit is torn and bloody, but his eyes are clear as they meet hers. Dedrick's mouth moves, but Susan's ears are ringing so loudly now that she can't hear what he says.

"No time," Susan gasps as she passes him. "One more."

Dedrick almost catches up to her as she is waiting for the doors to cycle, but then she is through, grabbing up one last wrench and shuffling across the floor.

Here, in this last room, the noise and the heat are beyond Susan's imaginations. She can see the pumps glowing with the strain of working against the over-pressurized air. Her mouth and throat are parched. She left her jacket behind two rooms ago and it feels as if there is more moisture in her sweat-soaked blouse than in her whole body.

Susan hefts the wrench and lines up carefully on the remote arm. She doesn't want to swing the wrench (which now feels as if it were heavier than her) more than once. She grunts, swings, and drops the wrench as it knocks the arm free. Susan takes two deep, unsatisfying breathes in the hot air, then picks up the wrench by its head to adjust it for the valve handle.

The wrench head won't move. The blow against the arm or the floor has jammed the nut against the threads. Susan looks at the handle and then at the wrench. Perhaps if she jams it between the spokes of the handle? Go back to another room for a different wrench? Behind her, the pump gives an agonized groan and Susan hefts the wrench onto the handle with a groan of her own.

Popping and creaking sounds begin to come from around the dark room, audible over the noise of the tortured works. Susan tests the wrench in the spokes of the valve handle. It seems firm. She puts her weight into it. For a moment the valve holds, and then it gives and she and the wrench fall to the tiled floor. Susan's hands and knees now sting, and her head won't decide if it wants to split open or fade to black. Susan rises from the floor because she wants to be turning the valve while her head is making its decision.

As Susan groggily lifts her head, she finds Colonel Dedrick already at the valve. He has the hot metal of the handle in his gloved hands and is trying to turn it. Susan gets the wrench and hands it to him, then ducks under to the other side of the pipe. Dedrick sets the wrench in the spokes and pushes against it until its handle is around to where Susan can grab it. She uses the wrench to give the valve another half turn, bringing the wrench to Dedrick's reach, and so on. In three minutes they are done. To no noticeable effect on the noise around them. Susan comes under the pipe once more, and she and Dedrick stagger, leaning heavily on one another, from the sweltering room and the dying machinery.

In the hallway, halfway to the elevator, Susan and Dedrick's legs seem to give out of a mutual accord. They slump against the wall and are soon lying on the trembling floor. Susan can see that Dedrick is saying something. "Kendal," perhaps. "Killed," maybe? Susan can't hear the man's voice over the ringing in her ears. Has he killed Kendal, or asking her, or...Susan is too tired to care. She just shakes her head, which turns out to be a painful mistake.

It is a lot cooler in the hallway, and Susan is happy with that. She simply lies on the cool tiles and breathes deeply while the tremors slowly die away. It looks as if she is not going to die after all.

Three hours before she had been on a concrete floor, in a place with no windows, making plans for a future that she wasn't sure she'd see. Now she would. The first order of business would be making Carter and Randall keep their promises. They would try to forget they owed her, but she wouldn't let that happen. Up from her cell, she had stared them in the eyes and seen where they were weakest.

The thought of her cell reminds Susan of the crude plans left on its wall. This time, she'll recover them. She has lots of ideas for revisions. □





The alien Masters were able to keep humanity enthralled for centuries...until Zatar the Collaborator became Zatar the Redeemer.

# OUT OF BONDAGE

BY DON WEBB

*Illustration by Todd Lockwood*

**B**ECAUSE OF MY SEVENTEEN years of faithful service, my Masters have allowed me to begin a history of my race. After sending the workers to their jobs, I climb the long ladder to the surface. I want to visit the ruined shack of Calder the god-maker. Calder was the last god-maker. The Masters had ended the art long before Calder's time, but he worked in an outlying province and escaped their attention for many years.

I hug the wall closely as a Master levitates by. Two hundred rungs to the surface. When I reach it I gasp and

pent. A saarik "bird" awaits. I show it my seal and whisper my destination into its ear fronds. It leaps into the darkling air, spreading its pinions at the height of the jump. I am uncomfortable in the saddle.

The Masters wish to study Calder, to study all dissidents. They hope my history will explain why my race has never been tractable, despite its careful breeding. Still, I am worried by the task—if I show any sympathy for the rebellious, my brains may be the next feast. They eat our brains and suck away our souls. If they love us, they postpone their feasts for long years.

The saarik flies quickly now. The ground below is blurred. Soon I will be at Calder's godworks. The dim, red light of dawn appears. The saarik descends.

Nothing remains of the hut. The sandstone quarry behind is full of broken idols. Some have the rough, unfinished look of the gods the Masters worship. Others are men or women or beasts or combinations. Why did Calder carve these? Why were work tokens painfully saved for the idols? I spot a small, round gray stone partially buried in the mud. Vague characters, in a tongue unknown to me, cover the surface. I free it from the mud. I like its surface, its feel in my hands. I drop it in my belt pouch and begin making the sketches, trying to envision the godworks as it was in Calder's day.

The saarik becomes uneasy in the red light of day. It mews pitiously. I finish my sketches and mount the bird, allowing it to speed me back to Nightside.

A Master is feeding. I dismount. I look for the chimney-ladder, ignoring the sucking sound. The Master stands upright, discarding the woman's body, which has gained a third eye in death—a bloody hole through which both brain and soul have been sucked away.

"Halt."

I stop.

"Did you find anything at the godworks?"

"No." Then I remember the round stone but say, "No. Nothing at all."

It is the first time in seventeen years I have lied to the Masters. I do not know why. I brave myself for the pain. The Master turns and walks away. I find the chimney-ladder and descend.

It's ZATAR THE COLLABORATOR."

**A** Sula, my mate, enters the chamber. Her hair is red; her eyes are full of loathing. She works the surface fields. I say nothing. I put down my pen and embrace her. Stone is more yielding. We mate at the Masters' commands.

"What's that?" She gestures at the stone sphere from the godworks.

"A souvenir from Calder's."

"Do they know you have it?"

This frightens me. I can suspect anyone of betrayal.

"No."

Sula looks at me with the tiniest of smiles. She tilts her head and asks, "No?"

"No."

She walks to the slab and lifts the stone from the parchment. She examines it from every angle. I tremble with fear and desire. She sets the stone down gently. She takes my hand. She is beautiful, the only beautiful thing on Nightside.

Later in the evening, just before sleep, I look at the stone. Red-glowing characters crawl over it like fireworms on coals. Perhaps it is only a dream. I sleep.

FOUR HOURS LATER A MESSENGER WAKES ME. SULA CURSES SOFTLY IN the darkness. One of the Masters wishes to speak to me. They never

sleep. I am used to such summons. In the spherical dark chamber the Master stands. The walls focus their thoughts. Here they are more powerful, more terrible, than anywhere else.

I stand. Humans may not speak until spoken to. Its three-fingered hand toys with the gray hair at my temples. A gentle, almost playful, touch to remind me that few of my species live to have gray hair. It too is old for its kind. Its skin stone is drying, its eyes turning the color of parchment.

"We have decided your history is unnecessary."

"I have worked on the history for twelve cycles."

"We have other work for you."

"May I work on the history during my rest periods?"

"No."

I wait for dismissal.

"You may rest tomorrow while waiting for a new assignment. You may go."

Sula is asleep when I return. I do not wake her. Someone has removed all of my parchment. The stone remains.

ON THE NEXT DAY, WHEN ALL ARE AWAKE, THE STONE SPEAKS.

"I have chosen you, Zatar, to liberate my people. I am Strav, the god of your fathers."

My mind has finally broken. I've been near the Masters too long.

"No, Zatar. I am Strav. I will change you. I will make you Zatar the Liberator."

"At what cost?"

"Merely to take vengeance on the race you call Masters."

"Why me?"

"There is little time and many probabilities to arrange. I am Strav. I will begin."

A bolt of bright light—brighter than anything I've ever seen—pierces my skull. I hear my blood boiling. All becomes dark.

"WE HAVE DECIDED TO MAKE YOU FOREMAN OF THE WATER WORKS."

The aged Master has summoned me again.

"I know nothing of construction."

"We will impart the knowledge you need. Your emblem of office." It hands me an ironwood staff topped with stone tentacles.

THE WORK IS HARD. THE MASTERS WISH US TO DIVERT A SURFACE RIVER to an underground reservoir. The saariks move the larger stones after the humans chip them free. The saariks are stupid. Sometimes there are accidents. Sula is among the workers assigned to me. I've put her among the earth carriers which seems the safest job.

Every quarter cycle a Master will make an inspection. The dim, red light of the sun pains them.

"You've done well, Zatar. You are ahead of schedule."

"The expertise implanted in me has done well." I bow.

"Thumper, I shall take one of your lesser workers. You have no need of so many."

The Master advances on the earth carriers. He stops one with his hand. It is Sula.

"No!" I yell. The Master almost hesitates, then reaches his tentacles toward her face. Something hot, something strong shoots from between my eyes. It reaches into the Master's skull. There is surprise—then the Master pushes back. I push harder. I run myself into his mind. I burn. The Master falls.

Hot lead is dripping into my skull from a thousand places. With difficulty I say, "The aged Master has died. Help me carry him to those below." Everyone looks at me with fear. Two of the earthmovers help me with the body. Sula runs away whimpering.

I'VE BEEN GIVEN A SMALL RUINED TOWER TO LIVE IN WHILE I DIRECT THE water project. Every quarter cycle I'm permitted a rest day. The workers rest every half-cycle.

Each day I stare at the stone, willing Strav to speak—to explain. Today my meditations are interrupted. A young stone-chipper, Teth, walks into my study and kowtows.

"I've waited to speak to you. I want to tell you my plan. I saw

you save the woman Sula."

"What plan?"

"I have found a weapon that will end our slavery."

"What weapon?"

"This." He pulls a small, intensely glowing crystal from a leather pouch. "I have found a large cache of these."

"Why tell me?"

"Because you are different. Because you have powers."

"I have no powers."

"I saw. You saved Sula."

"I saved no one. The Master was old. It died because of strain."

"No. You—"

"Nothing. Go away. Enjoy your rest day. Be mindful of your yoke." His excitement changes to fear.

"You'll turn me in."

"I don't know. Go away."

He turns to go. I extend my mind, sharp as a knife. I find the memory of the glowing stones. I cut it from its matrix and absorb it. Then I plant other memories. Slowly, leadenly, he drops the crystal.

The next day I tell the Masters that Teth has been stealing tools. They find his mind full of thoughts of rebellion, but no memories of me or of the crystals. Still, the stone says nothing.

Sula comes to the tower that night. The words day and night are from the Masters. They say the world once spun, but they stopped it. Perhaps it made them giddy. My new thoughts and abilities make me giddy. We share food and small talk. Finally she speaks, "The people are afraid of you."

"No, they are afraid of that." I point at my staff of office.

"No. They are afraid of you. They saw you battle the Master. Word spread that the Redeemer had come. But you do nothing. Today you betrayed Teth to them. We do not know what you are."

"But you came?"

"I came because I am grateful for my life. I came because I am your mate by their order. I came because I am curious."

"Do you think I am the Redeemer?"

"I—I don't know. You have no imagination, no rebellion. You've become more willingly with them than anyone. You carry their symbols. If you rebel, you rebel because of Higher Orders. If something has taken an interest in us, we may have a chance."

Her words stung. Hadn't I risked my life to save her? I said, "Go among the people. Tell them I am their Liberator. Bring their leaders to me the next rest day."

Sula stared at me. Many emotions played across her face.

"Go. Go now."

She left. I pounded the stone against the wall, ordering it to speak.

**T**HE NEXT FEW DAYS CHANGED THE attitude of the people. They looked at me with love, with awe, with worship. They even smiled at me when I had them flogged. They worked very hard.

I feared the Masters would notice the change—smell the love in the mental atmosphere.

Only Mularz, chief stone worker, hated me. He hated me for Teth's betrayal. It was an excellent hate, rising like convection waves from an oven. When Sula had gathered the people for the meeting, I was surprised to find Mularz among them.

"I HAVE COME TO LEAD YOU OUT OF BONDAGE."

Some of them believe, some are ready to believe, a few want to kill me lest I bring more trouble into their brief lives than they can stand.

"I will arm you with these."

I pull out a crystal. They gasp at its brightness. Mularz burns with rage. He knows.

"Bright light doesn't matter when the Masters can drop a ton of stone on you," says one of the stonecutters.

"You mean like this?"

I lift a boulder with my mind and drop it. I catch it inches above the stonecutter's head.

"You might have a chance, but what about us?" Mularz has finally spoken.

"I will awaken this power in you. We are days ahead of schedule. The stonecutters may mine the crystals in quantity. On the day that the river is to be diverted these—"

I pause before I can say the forbidden words—even now, even here, they have a hold on me.

"—the Masters will cause a local darkness and travel here to inspect the water works. I, Zatar, will strike the first blow."

I can feel hope—that most forbidden of human feelings—everywhere around me.

"Awaken the power in me first," Mularz says.

"No, me. I was the first to be saved by it."

Everyone rushes toward me.

"Back. Mularz and Sula first."

**T**HEY APPROACH. THEY KNEEL before me. I put my palms on their foreheads. I hope my body knows what it's doing. Something warm, bright, dry pours from me into them. The rest of the people come pair by pair. When they leave they look knowledgeable and confident. I try to lift the boulder again. It doesn't stir. I faint.

When I come to, I grab the stone and throw it as hard as I can against the tower wall. It shatters. A thin splinter of stone embeds itself in my chest. I pick up the pieces—it was a simple calcite-encrusted goode.

I pull the splinter from my chest.

Light, not blood, streams out. It gathers into a small bright ball.

"No, Zatar, I do not dwell in the stone, but in Zatar. I also dwell in the others, mainly in Sula and Mularz."

"Why?"

"Revenge. I used to rule the race you call the Masters. They excised me. I gave them their powers of mind and magic in exchange for the terrible darkness of their desires. They drove me out; I made Calder dream of me. I will destroy them and live in the horrible dreams of torments sublime of humankind."

"Why haven't you spoken till now?"

"I do not need to speak—merely to act."

"Will we overthrow the Masters?"

"Of course not. They're a cowardly race. When you revolt they'll flee to their home world. I'll open a passage and you'll lead your people to safety in another place and time. When you are strong enough, I'll permit you to encounter the Masters again. Then we'll destroy them."

"Where will you be till then?"

"In your hearts and minds. I am Strav the Burrower. I will teach you new arts—Magic and Warfare. To those who open themselves completely to me I will give long life and great power."

"Magic?"

"You'll learn. Or your descendants will."

The light pours back into my chest. I can feel with my mind, and it is as different from us as the Masters are.

OVER A HUNDRED OF THE MASTERS COME WHEN THE SKIES DARKEN. As overseer I share the dais with their leaders. The oldest Master

broadcasts a speech to his fellows. I can feel the alien trickle of its words. I raise my staff of office and bring it down firmly on the Master's head. My people flood the area with light. The air boils with mental energy. We kill twenty-five or thirty before they even realize what has happened.

I raise my staff and yell orders to the saariks. They've obeyed for cycles. They drop stones on the Masters. The air smells of their ichor.

Soon the Masters vanish, walking to another world. We've lost only a fourth of our own. The light moves within me. I draw a line of light with my staff. The line hangs in the air. I discard the staff and wedge my fingers into the glowing crack. I tear it open, revealing a glowing gray nothingness. I step in. My people follow.

New senses open. I can feel directions for time and for—? I sense the light. I will our way. There is great pressure. We are flattened, made to a wedge of will.

After an eternity we pierce our way back into a big brassy world. We're on a rocky desert. Sula and Mularz send out search parties. We will need food and water. I am exhausted. I sleep.

Sula wakes me.

"You must go from here."

"Why?"

"We have found no food, no water. The people think they'll die. You must find food. They blame you."

Mularz stands behind her, worried and angry.

"I am very weak."

"You must go."

I leave, avoiding the people. I hear babies crying. I hear my name cursed. I hear people calling the old Masters, begging for a return to their former lives.

When I break free from the huddled masses, I run. I run until I can hear no more. I find a small cave on a hillside. I enter. I draw my knife and slice upon my chest. Light flows out.

"An amazing thing has happened, Zatar. A new phase of my life cycle. Live and learn, eh, Zatar?"

"Why are we here? Why are we starving?"

"The human mind is much richer than the Masters'. So much energy. It's triggered a mitosis."

He has ignored my question; now I know something is very wrong. I try asking him again.

"If we don't get water soon we'll die and you won't have your revenge."

"I'm dividing. Soon there'll be two of me. Of course, since we have the same food-base we'll be enemies."

"What are you talking about?"

"Reproduction. I'm going to be a father or a son."

"Congratulations. What do we do in the meantime—eat rock and drink air?"

"After my division each of me will lead your people to a place they can feed."

"Each?"

"Yes. I'm developing two centers. One in Sula. One in Mularz. They're really much more forceful personalities than you are. Soon the two groups will be fighting. Nothing like heresy to get the emotional energies really going. Of course my two offspring will see each other as rivals—so they'll be no compromises ever. That's the way of gods, Zatar, we're good shepherds, fattening up our sheep."

"I'll stop this now, I'll warn them."

"Think, Zatar. Right now your people are really missing the food their brain-sucking Masters used to provide. They're blaming you for their loss. You go down there now and they'll slay you for food. They don't believe yet. Your Masters believed because they knew it was me. They thought they had eliminated Strav when they had introduced atheism to your people, but I merely slept. They'll find another race to enslave, one a little more docile; although it's hard to believe that there is a race as docile as humankind."

"Why should Sula and Mularz fight? I'll keep them together against you. Their love for me and their love for the people will

keep them allied."

"I'll appear to each of them of course. Each will get a different revelation. Their love for you and their love for the people are just what I'll use to separate them. But don't fear, Zatar. I have a place for you. Even as the two races will live on in other dimensions—fighting each other across the expanses of time—you will be remembered. I'll make you a saint. You found me by seeking after the mysteries of Calder, so what is about to happen should amuse you."

I start running from the cave to warn (perhaps with my dying words) my people. But everything slows. The air grows intolerably thick, and my legs weigh as much as the stone slabs we used to move for our Masters. My heart stops beating. I can feel air becoming jelly and then stone in my lungs. I can feel stone forming in my blood, stone replacing the urgency of life. Ironically I adopt a heroic pose, just before Strav's magic makes me into a statue.

I know not how stone eyes see, stone ears hear, a stone brain thinks, a stone heart feels—yet all of these things come to pass. I see the ball of light called Strav split into two lights, which speed past my view.

Later I hear Mularz's voice outside the cave.

"The god has told me that he has gathered Zatar up to his eternal service. All we must do is find and worship Zatar's material form, and we will be rewarded with food and riches. The god has revealed to me that the sacred relic is within a cave on the hill."

Mularz leads his people into my cave. They kneel before me and praise Strav, god of our fathers, and me, Zatar the Liberator, proclaimers of Strav's might. Although they are weak and trembling with hunger, they begin carrying me down the hillside.

Sula and twenty or so others wait at the base of the hill. She cries out, "See, it is as I told you!" Sula's band begins tossing rocks and crude spears. Mularz's group drops me, and I find that stone flesh does not feel pain even when it is cracked.

**S**ULA WON THAT FIRST SKIRMISH. Later she kissed my stone lips and promised her undying love for me. She led about half of our people to a planet with sun and life and endless riches. A temple was built around me, and incense burned in my honor, although stone nostrils do not smell its sweetness. I watched Sula grow old and die, and I believe that every day she loved me more. She was buried in a crypt beneath my holy self.

Decades went by, and there was a raid led by Mularz's son and I was taken to a strange world of dying seas and an orange sky. My right arm was broken off, but gashed back.

Since then I have looked upon followers in crowded cathedrals, been hidden away in darkened shrines, carted off in spaceships, in dimensions so strange to me that I could not even perceive the nature of my worshippers. I am sure Strav has split time and again over the hundreds of years. There are now heresies and orthodoxies and cults and sects—each feeding a different god—each believing that there is only one god. I am sacred to most of them, but others view me as a criminal. Once, one of the old Masters visited one of my shrines and performed obeisance to me. I do not know if this was a jest, or if they too succumbed to religion with the passing of the years.

Once, for a long time, I was in a gallery with other saints—some human, some not—and I wondered if they were but cold stone—or like me, victim of a god. But I never knew since stone lips may not speak. □



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Earth had finally made first contact with the Galactic Federation of which we'd dreamed...which might leave us more terribly alone than ever before.

# Fortitude

BY DAVID BRIN, PH.D.

*Illustration by Chris Moore*

**T**HE ALIENS SEEMED ESPECIALLY concerned over matters of *genealogy*.

"It is the only way we can be sure with whom we are dealing," said the spokesbeing for the Galactic Federation. Terran-Esperanto words emerged through a translator device affixed to the creature's speaking-vent, between purple, compound eyes. "Citizen species of the of the Federation will have nothing to do with you humans. Not until you can be properly introduced."

"But you're speakin' to us, right now!" Jane Fingal protested. "You're not makin' bugger-all sense, mate."

Jane was our astronomer aboard the *Straits of Magellan*. She had first spotted the wake of the N'Gorn ship as it raced by, far swifter than any Earth vessel, and it had been Jane's idea to pulse our engines, giving off weak gravity waves to attract their attention. For several days she had labored to help solve the language problem, until a meeting could be arranged between our puny ETS survey probe and the mighty N'Gorn craft.

Still, I was surprised when Kwenzi Mobutu, the Zairean anthropologist, did not object to Jane's presence in the docking bubble, along with our official contact team. Kwenzi seldom missed a chance

to play up tension between Earth's two greatest powers—Royal Africa and the Australian Imperium—even during this historic first encounter with a majestic alien civilization.

The alien slurped mucousy sounds into its mouthpiece, and out came more computer-generated words.

"You misunderstand. I am merely a convenience, a construct—entity, fashioned to be as much like you as possible, thereby to facilitate your evaluation. I have no name, and will return to the vats when this is done."

*Fashioned to be like us?* I must have stared. (Everyone else did.) The being in front of us was bipedal and had two arms. On top were objects and organs we had tentatively named ears and a mouth. Beyond that, he (she? it?) seemed about as alien as could be.

"Vips!" Jane commented. "I'd hate to meet your boss in a dark alley, if you're the handsomest bloke they could come up with."

I saw Mobutu, the African aristocrat, smile. That's when I realized why he had not vetoed Jane's presence, but relished it. *He knows this meeting is being recorded for posterity. If she makes a fool of herself here, at the most solemn meeting of races, it could win points against Australians back home.*

"As I have tried to explain," the alien reiterated. "You will not meet my 'boss' or any other citizen entity. Not until we are satisfied that your lineage is worthy."

WHILE OUR ISRAELI AND TAHITIAN xenobiologists conferred over this surprising development, our Patagonian captain stared out through the docking bubble at the Federation ship whose great flanks arched away, gleaming. Clearly, he yearned to bring these advanced technologies home to the famed shipyards of Tierra del Fuego.

"Perhaps I can be helpful in this matter," Kwenzi Mobutu offered confidently. "I have some small expertise. When it comes to tracking one's family tree, I doubt any other human aboard can match my own genealogy."

His smile was a gleaming white contrast against gorgeously perfect black skin, the sort of rich complexion that trendy people from pole to pole had been using chemicals to emulate, when we left home.

"Even before the golden placards of Abjain were discovered, my family line could be traced back to the great medieval households of Ghana. But since the recovery of those sacred records, it has been absolutely verified that my lineage goes all the way to the black pharaohs of the 20th Dynasty—an unbroken chain of 4,000 years."

Mobutu's satisfaction faded when the alien replied with a dismissive wave.

"That interval is far too brief. Nor are we interested in the time-thread of mere individuals. Larger groups concern us."

Jane Fingal chuckled, and Mobutu whirled on her angrily.

"Your attitude suits a mongrel nation whose ancestors were criminal transportees, and whose 'emperor' is chosen at a *rugby match*!"

"Hey, our king'd whip yours any day, even half-drunk and with 'is are in a sling."

"Colleagues!" I hastened to interrupt. "These are serious matters. A little decorum, if you please?"

The two shared another moment's hot enmity, until Nechemia Meyers spoke up.

"Perhaps they refer to cultural continuity. If we can demonstrate that one of our social traditions has a long history, stretching back—"

"—5,000 years?" inserted Mohandas Nayyal, our linguist from Delhi Commune. "Of course the Hindi tradition, as carried by the Vedas, goes back easily that far."

"Actually," Meyers continued, a bit miffed. "I was thinking more along the lines of 6,000—"

He cut short as the alien let out a warbling sigh, waving both "hands."

"Once again, you misconstrue. The genealogy we seek is genetic, but a few thousand of your years is wholly inadequate."

Jane muttered, "Bugger! It's like dickering with a Paddy over the price of a bleeding iceberg...no offense, Skipper."

The captain returned a soft smile. Patagonians are an easygoing lot, until you get down to business.

"Well then," Mobutu resumed, nodding happily. "I think we can satisfy our alien friends, and win Federation membership, on a purely *biochemical* basis. For many years now, the Great Temple in Abjain has gathered DNA samples from every sub-race on Earth, correlating our genetic relationships. Naturally, African bloodlines were found to be least isolated from the central line of inheritance—"

Jane groaned again, but this time Kwenzi ignored her.

"—stretching back to our fundamental common ancestor, that beautiful, dark ancestress of all human beings, the one variously called Eva, or M'tum, who dwelled on the eastern fringes of what is now the Zairean Kingdom, over 3 *million years ago*!"

So impressive was Mobutu's dramatic delivery that even the least sanguine of our crew felt stirred, fascinated, and somewhat awed. But then the N'Gorn servant-entity vented another of its frustrated sighs.

"I perceive that I am failing in my mission to communicate with lesser beings. Please allow me to try once again."

"We in the Federation are constantly being plagued by young, upstart species, rising out of planetary nurseries and immediately yearning for attention, claiming rights of citizenship in our ancient culture. At times, it has been suggested that we should routinely sterilize such places—filthy little worlds—or at least eliminate noisy, adolescent infestations by targeting their early stages with radio-seeking drones. But the *Kutathi*, who serve as judges and law-givers in the Federation, have ruled this impermissible. There are few crimes punished worse than meddling in the natural progress of a nursery world. All we can do is snub the newcomers, and restrict them to their home systems until they have matured enough for decent company."

"That's all?" The captain spoke for the first time, aggrat at what this meant—an end to Earth's bold ventures with interstellar travel. Crude our ships might be but humanity was proud of them. They were a unifying force, binding fractious nations in a common cause. It was awful to imagine that our expedition might be the last.

The translator apparently failed to convey the captain's sarcasm. The alien envoy-entity nodded in solemn agreement.

"Yes, that is all. So you may rejoice, in your own pathetic way, that your world is safe for you to use up or destroy any way you see fit, since that is the typical way most puerile species finish their brief lifespans. If, by some chance, you escape this fate, you will eventually be allowed to send forth your best and brightest to serve in carefully chosen roles, earning eventual acceptance on the lowest rungs of proper society."

Jane Fingal growled, "Why you puffed-up pack of pseudo-Pommes bast—"

I cut in with urgent speed. "Excuse me, but there is one thing I fail to understand. You spoke earlier of an 'evaluation.' Does this mean that our fate is not automatic?"

The alien emissary regarded me for a long time, as if pondering whether I deserved an answer. Finally, it must have decided I was not that much lower than my crewmates anyway. It acknowledged my query with a nod.

"There is an exception—if you can prove a relationship with a citizen race. To determine that possibility was the purpose of my query about species lineage."

"Ah, now it becomes clear," Mohandas Nayyal said. "You want to know if we are *genetically related* to one of your highborn castes. Does this imply that those legends may be true? That star beings have descended, from time to time, to engage in sexual congress with our ancestors? By commingling their seed with ours, they meant generously to endow and improve our..."

He trailed off as we all saw the N'Gorn quiver. Somehow, disgust was conveyed quite efficiently across its expressive "face."

"Please, do not be repulsive in your bizarre fantasies. The behavior you describe is beyond contemplation, even by the mentality ill. Not only is it physically and biologically absurd, but it assumes the highborn might wish to improve the stock of bestial niaisances."

Why in the universe would they care to do such a thing?"

Ignoring the bald insult, Meyers, the exobiologist added, "It's unlikely for another reason. Human DNA has been probed and analyzed for three centuries. We have a pretty good idea where most of it came from. We're creatures of the Earth, no doubt about it."

When he saw members of the contact team glaring at him, Meyers shrugged. "Oh, it would all come out in time, anyway. Don't you think they'd analyze any claim we made?"

"Correct," buzzed the translator. "And we would bill you for the effort."

"Well, I'm still confused," claimed our Uzbeki memeticist. "You make it sound as if there is no way we could be related to one of your citizen-races, so why this grilling about our genealogy?"

"A formality, required by law. In times past, a few exceptional cases won status by showing that they possessed common genes with highborn ones."

"And how did these commonalities come about?" Mobutu asked, still miffed over the rejection of his earlier claims.

The N'Gorm whistled yet another sigh. "Not all individuals of every species behave circumspectly. Some, of noble birth, have been known to go down to planets, seeking thrills, or testing their mettle to endure filth and heavy gravity."

"In other words, they go slumming!" Jane Fingal laughed. "Now *those* are the only blokes I'd care to meet, in your whole damn Federation."

I caught Jane's eye, gesturing for restraint. She needn't make things worse than they already were. The whole of Earth would watch recordings of what passed here today.

Nechemia Meyers shook his head. "I can see where all this is leading. When galaxies go slumming, as Jane colorfully put it, they risk unleashing alien genes into the ecosystem of a nursery world. This is forbidden interference in the natural development of such planets. It also makes possible a genetic link that could prove embarrassing later, when that world spawns a star-traveling race."

The translator buzzed gratification. "At last, I have succeeded in conveying the basic generalities. Now, before we take your ship in tow, and begin the quarantine of your wretched home system, I am required by law to offer you a chance. Do you wish formally to claim such a genetic link to one of our citizen races? Remember that we will investigate in detail, at your expense."

A pall seemed to settle over the assembled humans. This was not as horrible as some of the worst literary fantasies about alien contact, but it was pretty bad. Apparently, the galaxy was ruled by an aristocracy of age and precedence, one that jealously guarded its status behind a veneer of hypocritical law.

"How can we know whether or not to make such a claim?" Kwendi Mobutu protested. "Unless we meet your high castes for ourselves?"

"That will not happen. Not unless your claim is upheld."

"But—"

"It hardly matters," inserted Nechemia, glumly.

We turned. The captain asked, "What do you mean?"

# Imagine such a life- swarm, sweeping across the galaxy, settling every habitable world in sight. A prairie fire of colonization that radically changes every world it touches...

"I mean that we cannot make such a claim. The evidence refutes it. All we need is to look at the history of life on Earth."

"Consider, friends. Why did we think for so long that we were alone in the cosmos? It wasn't just that our radio searches for intelligent life turned up nothing, decade after decade. Aliens could have found efficient technologies that made them abandon radio, the way we gave up signal-drums. Exactly what we found to be the case."

"No, a much stronger argument for our uniqueness lay in the sedimentary rocks of our own world."

"If intelligent life was plentiful, someone would invent starships and travel. Simple calculations showed that just one such outbreak, if it flourished, could fill the galaxy with its descendants in less than 50 million years...and that assumed ship technology far cruder than this N'Gorm dreadnought hovering nearby."

He gestured at the sleek, gleaming hull outside that had accelerated so nimbly in response to Jane Fingal's hail.

"Imagine such a life-swarm, sweeping across the galaxy, settling every habitable world in sight. It's what we *hazmoss* thought we'd do, once we escaped Earth's bonds, according to most science fiction tales. A prairie fire of colonization that radically changes every world it touches, forever mixing and reshuffling each planet's genetic heritage."

The emissary conceded. "It is illegal, but it has happened, from time to time."

Meyers nodded. "Maybe it occurred elsewhere, but not on Earth."

"How can you be sure?" I asked.

"Because we can read Earth's biography in her rocks. For more than two billion years, our world was 'prime real estate.' It had oceans and a decent atmosphere, but no living residents higher than crude, prokaryotes—bacteria and algae—simmering in the sea. In all that time, until the Eukaryotic Explosion half a billion years ago, any alien interference would have profoundly changed the course of life on our world."

Jane Fingal edged forward. "This 'explosion' you spoke of. What was that?"

"The *Eukaryotic Explosion*," Meyers explained, "occurred about 560 million years ago, when there evolved nucleated cells, crammed with sophisticated organelles. Soon

after, there arose multicelled organisms, invertebrates, vertebrates, fishes, dinosaurs, and primates. But the important datum is the 2 billion years before that, when even the most careful of colonizations would have utterly changed Earth's ecology, by infecting it with advanced alien organisms we would later see in sediments. Even visitors who flushed their toilets carelessly..."

Meyers trailed off as our astronomer made choking sounds, covering her mouth. Finally, Jane burst out with deep guffaws, laughing so hard that she nearly doubled over. We waited until finally Jane wiped her eyes and explained.

"Sorry, mates. It's just that...well, somethin' hit me when Nechemia mentioned holy altars."

I checked my memory files and recalled the euphemism, popular in Australian English. Every Aussie home is said to contain at least

*Continued on page 96*

# THE DAY THE MAGIC CAME BACK

BY JAMES GUNN

*Illustration by Michael Gibbs*

**D**R. KNOWLAND LOOKED AROUND THE ISOLATION room at the masked faces of the nurse and of Susan Grinnell, his resident physician in internal medicine, and then back to the face of the child on the hospital bed. Her name was Linda Constant. She was seven years old. With her red cheeks and her long, golden hair spread out upon the pillow, she looked like an angel, but the color in her cheeks came from fever, not good health. Her eyes were closed. Knowland thought they might never reopen. If she were awake to see the three of them standing over her he wondered if she might think they were apparitions from the past, witch doctors come to drive the demons from the body they had possessed.

But the powers of medicine were more limited. Knowland's gaze went to the two bottles of antibiotics hanging inverted from their stands, one on each side of the bed, each with a tube leading to a pump on the IV pole and from there to a needle inserted into a vein at the inner elbow of each small arm. All their medical knowledge, all their armamentarium, were failing before the onslaught of this child's illness, and he was dreading the moment when he would face her parents and tell them that science had been defeated by a simple bacterium, *mycobacterium tuberculosis*.

Knowland turned and walked from the room. He was a man of



medium height and graying hair and a slight pouch. He walked on his heels with his feet turned out, like a duck, as he made his way down the hall. But no one smiled. He was a man of great dignity, and his patients, and many of his coworkers, thought he was the next thing to God.

He went to the nearest lavatory, washed his hands, and removed his mask. When he emerged Susan was waiting for him.

"Isn't there something else we can try?" she asked. Ordinarily she was a plain woman, but when concern transformed her face Knowland thought she was beautiful and that even though her husband was frequently neglected, he was luckier than he knew.

Knowland shook his head. "The strain is antibiotic-resistant. We've tried the whole spectrum."

She looked at him as if willing him to work a miracle. Knowland shook his head again, this time as if trying to rid himself of a heavy burden. "I'm going to have to tell them."

"The Constants? Do you want me to do it?"

"You'd be better at it," Knowland said, "but they need to hear it from me."

"They've asked if they could bring in someone to see Linda."

"What kind of someone?"

"Someone to pray for her, or something like that."

Knowland folded his arms across his chest. "They've lost faith in me—I can understand that—but they might have asked me."

"They belong to a sect that believes in healers. They feel that they sinned by bringing Linda to a hospital. They were too afraid to go with their own beliefs. Now they're afraid again. Afraid to ask you."

"If they can bring in a healer?"

She nodded.

"Why not?" Knowland said.

"You're going to let them?"

"We've failed. Why shouldn't they try what they believe in? I've never understood why medicine should deny people the comfort of alternatives."

"You think there's a chance?"

Knowland looked at her like a teacher disappointed in a promising student. "Faith healers and snake oils don't work. Medicine doesn't oppose them because of that but because they keep the ill from seeking effective treatment. Well, the Constants have tried that and it's failed. Now they can make peace with their daughter's dying in their own way."

OVER THE NEXT FEW DAYS KNOWLAND GOT ACCUSTOMED TO SEEING THE tall, thin man sitting next to the bed of the tubercular child. He was of that indeterminate age reached by some men between the middle years and the old. He had dark eyes and a beak of a nose like an owl. His hair, though thin, was still black and his skin was unlined, but his face reflected the serenity obtained through long years of experience with the world's tragedies. He said nothing. When he was offered a mask, he shook his head. He held the child's hand and stared at her as if the power of his will was enough to force open her eyes, to turn on her smile, to make her well again.

Linda's parents, one at a time or together, often were present as well, but they stood on the other side of the bed, smoothing their daughter's hair or cooling her fever with a wet cloth. They asked Susan and then Knowland to stop the antibiotics. They pointed at the places on the child's arms and hands where the needles had left ugly hematomas on their daughter's delicate skin and agonized over the nurses' struggles to find new places to insert heparin locks.

"I can't," Knowland said. "If you want the treatment to stop, you'll have to remove her from my care."

"You said you can't help her," the mother said. She was a sturdy woman with freckles and a sunburned nose. Her hair had once been yellow, like her daughter's, but now was an indeterminate brown.

"I know," Knowland conceded, "but I can't stop trying. Just as you can't." They were standing outside the isolation room. He nodded toward the door where their healer sat with the sick child.

The Constants gave up their efforts to stop the medical treatment. They feared removing her from the antiseptics and the round-the-clock attentions of the hospital, and their healer seemed not to care. He did not care, either, about the activities of the hospital staff around

him. He kept his vigil and ignored everything else, leaving only, Knowland presumed, to take care of his physical needs. It was a presumption on Knowland's part: The healer was always there when the doctor opened the door on his rounds.

On the fourth day, the healer was gone and Linda looked better. Her temperature had dropped, and the false flush of fever in her cheeks had faded. She had not opened her eyes, but she had summoned the strength to cough again.

On the fifth day she was awake and recognizing her parents. On the sixth day she was sitting up and talking to everyone, her parents, the nurses, Susan, even Knowland. She had been everyone's favorite patient in the hospital and they all celebrated the normality of her temperature and pulse. Her cough had disappeared, and her chest sounded better. A few rales and crackles, but even they seemed to be diminishing. The sputum samples came back negative.

"When are you going to release her?" Susan asked.

"Tomorrow."

"Shouldn't we continue the antibiotics for a few more days?"

Knowland did not like questions about his judgment, and sometimes he snapped at students. But this time he seemed distracted. "Look at the record," he said mildly. He had admitted to himself, although he had not yet come to the point of admitting it to his resident, that the antibiotics had done nothing.

"If it wasn't the antibiotics," Susan said, "then what was it?"

Knowland shook his head. Next day, as the Constants checked their daughter out of the hospital, Knowland asked them the name of their healer.

"Mr. Alma," Constant said. He was a sturdy man, a farmer, with weathered hands, a pale forehead, and a brown frown between the cheeks down.

"That's his real name?"

"That's his name," Constant said.

"Why didn't you call him in sooner?"

"He was on another mission," Mrs. Constant said. And then she added, as if admitting a lapse of faith, "We were afraid."

"And where can I find Mr. Alma?"

"Why do you want to?" Constant asked.

Knowland shrugged. "I don't know. We might have something to talk about." He didn't know what it might be, yet.

A WEEK LATER HE HAD FIGURED IT OUT. THE ADDRESS THE CONSTANTS had given him turned out to be a storefront in a part of the city that had completed a good part of the cycle from decent housing to slum to restoration. The storefront, however, was still in the slum stage. It had once been a hardware store, but the glass had been broken out of the front windows and replaced by plywood. The plywood had been painted green at one time, scrawled with graffiti, and then painted pink, graffiti'd, painted blue and later other colors so that now words, drawings, and colors came through indistinctly like palimpsests from the beginning of the world. Where a sign had once said "Hardware," other words had been neatly lettered: "All Souls Chapel."

The first time Knowland knocked at the battered wooden door he got no answer. The second time, a service of some kind was in progress—he could hear someone speaking and the mumble of an audience—and Knowland couldn't wait. The third time, late in the afternoon, he heard a voice asking him to enter. The interior of the room was gloomy after the sunshine outside, and a few moments elapsed while his vision was adjusting. The room was neat and clean but shabby. Folding chairs were arranged carefully across the floor, eight across and eight deep. Beyond them was an old wooden desk. Behind the desk was the dark-haired man the Constants had called Alma.

"I'm Dr. Knowland," he said.

"I know you." The man's voice was thin and reedy, and Knowland realized it was the first time he had heard it.

"I wanted to ask you about Linda Constant."

Alma nodded.

Knowland approached the desk that perhaps also served as a rostrum or pulpit or maybe even an altar. "How is she?"

"She's well," Alma said, "but you don't need me to tell you that."

"No," Knowland said. He sat down in one of the folding chairs, sud-



desly feeling as if his knees were unable to support him. He looked down at his soft, white hands and then up at Alma waiting patiently behind the desk. "How did you do it?"

"It weren't you and your medicines?"

"You know it wasn't."

"Most doctors take credit for what happens in their hospitals," Alma said.

"I'd failed. I know that. I want to know why you succeeded. Was it faith? Some kind of supernatural intervention? God?"

The tall, thin man stood up, towering now above the seated physician. "None of them. You may use it again me, but I'll give you the truth—"

Knowland waved his hand impatiently. "I just want to know one thing. All my life have I been wrong about the world and the way it works?"

"Once upon a time people would have called me shaman and honored me," Alma said. "Later folks'd call me a witch and burn me at the stake. Today I'm called a faith healer and scorned." His soft voice was without passion. "All I do is put sick people right with the way things is, underneath, where the real stuff is."

Knowland's hands tightened and he was sorry he had come, but he could think of no easy way to leave, and as he listened to Alma's soft voice he began to realize that what the man was talking about in his inadequate vocabulary was physics and biology.

LATER, HE WAS SEATED IN HIS OFFICE WHEN SUSAN ARRIVED FOR THEIR daily conference. His desk was broad and polished, and he had an oriental rug on the floor, a broad window behind him opening on trees and a carefully tended green lawn dotted with flower beds, and bookcases filled with medical texts on either side. For several minutes he stared without speaking at a medical file in front of him. Finally Susan asked if something was bothering him.

"The healer's name is Alma," Knowland said without looking up. "That isn't his real name, of course, but he wouldn't tell me that. He told me other things. It is easier to be considered a preacher than a healer, he said. Preachers are unregulated; anybody else can be prosecuted for practicing medicine without a license."

Susan looked at him with concern. "Why did you go to see him?"

"Something happened in that hospital room with Linda Constant, and I wanted to know what it was. No, that's wrong—I had to know what it was."

"The antibiotics finally took effect," Susan said.

"You know that isn't true," he said. "It was something else, something frightening."

People have always understood, Knowland said, that the mind could influence the body. Even medical science conceded the reality of psychosomatic illnesses and sometimes the fact that recovery was aided by a positive attitude. It could be called psychosomatic healing. But medical science had no mechanism for the operation of psyche on the soma, and it denied the ability of someone else's mind to heal another person's sickness.

Alma had come up with a mechanism, and as Knowland had listened to Alma's thin voice only able to hint at the abstractions the healer was attempting to describe, Knowland had come to understand it, too. The underlying reality of the universe, Alma had said, lies far beneath the perceptions of the creatures that live within it. "In the beginning was the word," said an astronomer named Harlow Shapley, Knowland thought, "and the word was hydrogen."

Humanity cannot see or hear or touch or smell or taste the basic reality, because it is atomic and molecular and cellular. The only thing humanity has that can compare with that intangible micro-stuff from which all the macro-stuff is built is the mind. Thought, like atoms and molecules and cells, exists without being tangible, and thought not only can encompass the basic reality, it can influence it. Alma could persuade the body's cells and the bacteria and the viruses to work together rather than like selfish individuals.

That is what Alma had told the physician. In spite of the evidence provided by Linda's recovery, Knowland could not accept such far-fetched claims, but he also could not deny the bare possibility that Alma might not be a charlatan.

Once, Alma said, magic had worked because people believed in it.

*“Once upon a time people would have called me shaman and honored me,” Alma said. “Later folks’d call me a witch and burn me at the stake. Today I’m called a faith healer and scorned.” His soft voice was without passion. “All I do is put sick people right with the way things is, underneath, where the real stuff is.”*

***Once, Alma said, magic had worked because people believed in it. It wasn't a case of ignorant people trying to explain a world filled with uncontrollable forces and inexplicable events by peopling it with spirits and demons and gods. A few of them, the shamans, perceived a deeper truth than the deceptive world of everyday reality.***

It wasn't a case of ignorant people trying to explain a world filled with uncontrollable forces and inexplicable events by peopling it with spirits and demons and gods. A few of them, the shamans, perceived a deeper truth than the deceptive world of everyday reality. And their perceptions enabled some of them to shape that deeper truth to the needs of the people around them. Of course, it was easy to make a mistake or, as such positions brought honor and privilege, to pretend to a power that one didn't possess. Sometimes the truths also became confused and became visions that were interpreted differently by prophets and messiahs, becoming religions and superstitions, but all were reflections of the underlying reality that is and always has been unified and available. It was nature, not the supernatural. And then science came along, with its objective reality and demonstrable power over nature, and faith weakened and shamans forgot and were forgotten. The magic was lost.

"And you believed this?" Susan asked.

Knowland could tell she was concerned about his mental stability. Had the experience with Linda unhinged his mind? "What's remarkable about it is that this man of almost no education has come up with a theory about the nature of the universe that is not much different from that of our most learned physicists."

Susan frowned. "That sort of thing is out there in the popular press and on science programs. If it worked, that would be remarkable."

"Yes," Knowland said. "It seemed to work in the case of Linda Constant."

"Medical literature is filled with spontaneous cures."

"Do you know how weak that sounds? What we cannot explain, we call spontaneous, as if that explains anything."

"What are you going to do?"

"I've asked Alma to let me go along on a few of his healing sessions. You may have to cover for me."

"Of course. But aren't you concerned about being too—?"

"Gullible?" He knew his expression reflected an inner turmoil, and he knew Susan was watching him for signs of a mental breakdown. But he could not conceal the doubts that were eating away at a lifetime of belief. "Of course I am. My reputation would be ruined if anyone found out I was taking Alma seriously. But I'm also concerned, as a man of science, about denying the existence of phenomena that I can see in front of me."

THEY FORMED AN ODD TEAM, THE TALL, THIN HEALER AND THE SHORTER, plumper physician. Their visits never took them to hospitals. Instead, they met in bedrooms of decaying houses and apartments. Sometimes the bedroom was the only room or the only one presentable enough for visitors, and the ailing person had been moved into it. Many were neat, but whether the rooms were clean or filthy, Alma went about his business without a glance or a word.

He allowed Knowland to check the ailing person's pulse, temperature, and blood pressure, and to make a routine physical examination, listening to the heart and the lungs and feeling the lymph glands. Knowland would take a blood sample and come to a tentative diagnosis that he later checked, as best he could, in the laboratory. Then the vigil began. Knowland could not take time away from his normal practice and teaching to monitor the entire process of healing, but he checked on each person at the beginning of the vigil, in the middle, and at the end. Over a period of four weeks, Alma had recorded a remarkable string of successes.

As nearly as Knowland could tell without full clinical examinations, one elderly woman had a blood infection, an old man had kidney failure, a middle-aged woman had pancreatic cancer, a middle-aged man had pneumonia, and a ten-year-old boy had leukemia. All were poor and some were virtually without means. Two lived in the country on small plots; one was a squatter, and the other lived on land that had been reduced from a more extensive farm. Three lived in the inner city. The rural residents, at least, had gardens and neighbors. Those in the inner city subsisted on welfare and food stamps and junk food.

Knowland resisted the urge to get them into a hospital where their conditions could be treated. He tried to tell himself that this was a scientific experiment, but he could not shake the feeling that he had vio-

lated his Hippocratic Oath and, more important, his personal principles. He thought about the studies in syphilis allowed to continue in Alabama and the experiments conducted in Nazi Germany under the guise of science. He felt that way, that is, until the ailing individuals began to show improvement. All but the old man with the renal condition were out of their beds and back to normal activities after a week. They seemed, as far as Knowland could discern, to be cured, although if his original diagnoses had been correct, the pancreatic cancer at least had been terminal. The leukemia might have gone into remission, but the rapidity and the extent of recovery were uncharacteristic. Without proper diagnoses and data, the cases were without scientific standing and would be worthless as anything but anecdote, but Knowland knew that with the best of luck he might have been successful with only two of the illnesses.

At the end of the month, Knowland congratulated Alma on his healings. They were standing outside one of the tenements surrounded by litter and uncollected garbage. The odor was strong, but Knowland did not notice. "If anybody had told me about these cases, I wouldn't have believed him."

"They'll not believe you, either," Alma said.

"What about the man with the renal condition?"

"The what?"

"The old man with the kidney problem. The one who died."

"He'd much to overcome," Alma said. "And I couldn't reach his—I know not what to call it."

"How many do you lose?"

"A few. Here and there. Sometimes I can't touch their will to live. Sometimes my power fails. Sometimes they fight me."

"Skepticism?"

"Give it no name," Alma said. "Some cling too strong to the world of the senses; some won't hold with the unseen."

"Have you ever tried to teach someone else to do what you do?" Knowland asked.

"People can be shown how to heal if they can see the hidden truth and if they has the power. I was taught as a boy and have taught some others the same; many cannot learn. But those that can, they spread far and wide. Beyond the seas, there may be many, I sense. Maybe some places never test the truth."

Knowland thought for a moment and then asked, "If I could set up some controlled experiments, would you participate? While you worked, could we check your pulse, your blood pressure, your brain waves?"

"No," Alma said.

"No?" Knowland said. "And yet you allowed me—"

"You cared about Linda. You let me help her. But this other would not work. Even with evidence, people would doubt, and I would be shamed. My people would wonder. Maybe question my power." Alma looked at Knowland. "This troubles you."

When Knowland spoke, his voice was uneven. "How can we control this power, turn it into a science, if we cannot study it?"

"Some things science can't never going to control," Alma said.

SUSAN FOUND KNOWLAND IN THE DOCTOR'S LOUNGE, A CLEAN, STERILE room with shiny chromium furniture, a coffee maker, a small refrigerator with soft drinks, and no humanizing touches, not even curtains at the windows. "Look who I've got," Susan said, too brightly. She was holding Linda Corbett's hand, and the seven-year-old was hanging back, the other hand to her mouth, looking overwhelmed by the building and its official-looking occupants. "Her mother brought her to say hello."

"Hello, Linda," Knowland said gently, holding out his hand.

The child hesitated for a moment and then reached for his hand with the hand that had been at her mouth and put it trustingly in his. It felt wet, but Knowland shook it and said, "How are you feeling, Linda?"

"I'm fine," Linda said. "You don't have a mask."

"No, it isn't necessary now, is it?"

The little girl shook her head. "I feel all well," she said.

"That's good," Knowland said. "Stay that way."

"I will," she said with conviction, and turned toward the door. She looked back. "My mother said to tell you 'thanks,'" she said.

"You're welcome," Knowland said.

When Susan returned, Knowland was looking at his stethoscope, turning it over and over in his hands as if he had never seen one before and was trying to figure out what it was good for. He looked up. "De nada," he said.

"She's well again," Susan said. "That's what counts."

"Is it?" Knowland looked toward the window where the afternoon sunshine was struggling through the leaves of the giant pin oak that shielded this side of the hospital.

"You can't blame yourself for someone else's success. If that is what it was."

"That would be mean-spirited, wouldn't it," Knowland said. "Alma's method works. He heals people."

"Even if that's true," Susan said, "there has always been room in the world for the people of faith and the people of science. You'll have plenty of work to do."

Knowland turned on the bench seat of the couch. "You think I'm concerned because Alma and his kind will put me and you out of business?" Susan looked surprised at Knowland's question.

Knowland looked back toward the window. "I suppose there's some of that. Some jealousy is hard to avoid. But more than that is at stake here."

"What is at stake?" she asked.

"It's not just the healing. It's science itself. The ability to manipulate the basic reality of the universe may start with restoring people to health, but what is to stop it from working miracles of other kinds?"

"Like what?" Susan asked.

Knowland shrugged. "Creating food. Loaves and fishes, say. Or gold. Or death for our enemies and good fortune for our friends. Energy for free if our applications are proper; atomic explosions if they are not. Once magic is let loose upon the world again, there is no place it cannot touch."

"I didn't have your experience with Alma. But even if magic worked," Susan said, catching her breath in the middle, "surely there would be rules and controls."

"The very essence of magic is that there are no controls," Knowland said. "Only other magic."

Susan raised her chin stubbornly. "Then you'll just have to learn how to do it yourself."

"That's just it," Knowland said. "I can't. I'm too tied to the sensory world I perceive around me, that I have lived with all my life. I'm too committed to science, to ways of understanding that have nothing in common with faith. I'm bound by the physical laws I learned long ago."

"Is that why you're upset?"

"No," Knowland said. "That isn't it. The important thing is not who does it but that this can be done only by those chosen by some unseen power to possess this unique ability. Like the princess and the pea or King Arthur and the sword in the stone. Not earned but given. The image of the future is the Middle Ages. That's Camelot under another name. The divine right of kings and the magical rites of the Elect."

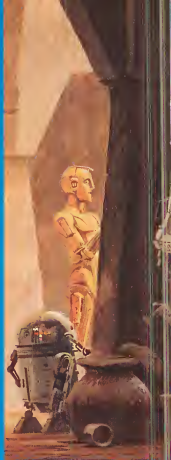
"Even so," Susan said, "isn't it worth a great deal to have something to fall back on? Something that can help when medical science can't?"

"To everybody seeking mercy, the appeal of magic is irresistible," Knowland said. "But it means that medicine and science are finished. All science can offer is justice. Science has much to answer for, including its neglect of mercy, but it transformed the world into something egalitarian instead of hierarchical. Science created democracy and affluence and individual choice. Now the magic has come back and the world is going to be changed beyond recognition, and it is not going to be in the hands of those who work hard and study and understand but of the Elect. They may do good, they may do evil, but science is ended, and with it any possibility of getting ahead, and of pulling the rest of humanity along, by anything but good fortune or the blessings of the Chosen."

"I don't think I ever told you," Susan said, "that my brother is HIV positive."

Something snapped. As Susan watched, Knowland walked to the wastebasket beside the coffee machine and dropped into it his broken stethoscope. □

# ILLUSTRATING A GALAXY FAR, FAR AWAY...



**E**VER WONDER WHAT PRINCESS LEIA'S HOME-world Alderaan looked like before the Death Star blew it up? Ever imagine how the evil Emperor decorates his imposing Imperial Palace? Want to get a really good glimpse of the snow monster that attacked Luke Skywalker on the ice planet Hoth?

*The Illustrated Star Wars Universe*, (Bantam Books, 208 pp., \$35.00) a new hardcover coffee-table book, takes readers to all these places and more, in full color, through the artistic vision of Ralph McQuarrie.

McQuarrie's work is familiar to everyone who saw the *Star Wars* films. Serving as Lucasfilm's concept artist for *Star Wars*, *The Empire Strikes Back*, and *Returns of the Jedi*, he is the man responsible for designing the appearance of Darth Vader, R2-D2, C-3PO, the dreamlike Cloud City, and the looming palace of Jabba the Hutt. In short, the *Star Wars* films look the way they do because of

his guiding hand and artistic eye.

McQuarrie tells the story of how George Lucas, having difficulty getting a studio to finance *Star Wars* (because of Hollywood skepticism over the amount of money a science fiction film could ever make), approached him and asked for help. Lucas showed him the draft script and asked him to paint a few scenes from the story that McQuarrie found particularly inspiring. McQuarrie used his imagination and painted R2-D2 and C-3PO in the desert, storm troopers in the corridor of the Death Star, Luke and Darth Vader battling with lightsabers, and rebel starfighters attacking the enormous Death Star. Armed with these colorful paintings, Lucas went to his next studio meeting—at 20th Century Fox—and was able to convince them just how spectacular his motion picture could be.

Ralph McQuarrie originally worked as a technical illustrator for the Boeing Aircraft

The *Star Wars* author looks at the *Star Wars* art of Ralph McQuarrie.

KEVIN J. ANDERSON



*ABOVE: The Mos Eisley Saloon is the most colorful dive on Tatooine, Luke Skywalker's harsh desert home. LEFT: Princess Leia Organa and Lando Calrissian enjoy the view from an upper pavilion on Cloud City.*

Company, and during the 1960s moved on to help create animation sequences for CBS News and NASA for the Apollo missions. McQuarrie also did covers for science fiction books (including *Splinter of the Mind's Eye* by Alan Dean Foster and *Robot Dreams* by Isaac Asimov) and worked on various other science fiction films, including *Close Encounters of the Third Kind* and *Cocoon*.

The *Illustrated Star Wars Universe* contains some of McQuarrie's most masterful work, specially commissioned paintings that show fascinating parts of George Lucas' Star



*Orbiting in space, the Imperial Planet, the Death Star can be seen under construction. BELOW Two of the most fearsome creatures on Dagobah, the swamp slug and the dragonsnake, do battle on Yoda's homeworld.*

Wars universe. It is a make-believe *National Geographic* volume of an imaginary galaxy, taking readers to eight different worlds: the harsh desert of Tatooine, home of Luke Skywalker; Yoda's swampy, mist-shrouded planet Dagobah; the frozen world Hoth and its nearby Asteroid Belt; the forest moon of Endor, home of the Ewoks and site of the rebels' final battle against Darth Vader and the Emperor; the cloud-covered, gas giant Bespin, the location of Lando Calrissian's Cloud City; and the jungle moon of Yavin 4





and its exotic temple ruins. Lucas also gave permission to develop two planets never actually seen in the films—the dark and city-covered Imperial Center, the Emperor's capital, and Alderaan, the peaceful homeworld of Princess Leia, now only a memory after being blasted to rubble by the Death Star.

Because of my own work on other Bantam *Star Wars* projects (Not to mention the fact that I live within driving distance of the artist's studio!), I was selected to write the accompanying text to showcase McQuarrie's magnificent new paintings, to work with him as we developed concepts so that prose and paintings tied together.

Because of the difficulty involved in creating a planet from whole cloth—not just once but eight times!—we tackled each world separately, alternating between lush jungles brimming with exotic life forms and uninvi-

dingly bleak places with breathtaking climates and geology.

Each month I drove up to Ralph's studio, bringing my laptop computer and some notes, then we sat down for a few hours and brainstormed the particular world at hand. I grew to call these meetings our "Planet of the Month Club."

Sitting in Ralph's studio, I was surrounded by his sprawling collection of old issues of *National Geographic* (organized, not by date, but as to which contained good examples of mountains, rivers, snow, ice, plants, etc.), his models of vehicles and ships, well-thumbed books of military hardware and portfolios of artists he admired, and the additional artistic *reference* paraphernalia that other people might view as junk.

My fingers tried to keep up with typing the ideas flying back and forth, concepts for

strange critters, interesting camera angles, designs for cities and buildings, weird geological formations, and vistas of alien landscapes. Ralph, meanwhile, used a felt-tip pen to sketch out postage stamp-sized doodles, perspectives he might want to use for paintings. I remember once he scribbled a stark, brooding little sketch of a ramshackle sky city, a ghost town in the clouds on the gas giant Bespin; I was so captivated by the idea that I used it as a setting in one of my *Star Wars* novels, and Ralph himself developed it into four paintings and drawings for the *Illustrated* book.

Then, taking my notes home, I spent the next several weeks drafting the 5,000 or so words for each chapter, then sent the draft to Ralph so he could read how I had described and fleshed-out the ideas we had discussed. From that draft, he expanded his sketches and developed them into full paintings.

**RIGHT:** The Imperial City, the emperor's capital, is claimed to be the safest planet in the galaxy. At least by the emperor. **INSET:** Darth Vader walks through an Imperial City never envisioned in any of the three Star Wars films. **BELOW:** In the Star Wars universe, eventually, the good guys always win.







Because this volume was to be over 200 pages long, with full-color art on every page, we also had to rely on additional drawings. While we weren't brainstorming or finishing our respective parts of the book, we took frequent trips to the Lucasfilm art archives, rummaging drawer after drawer after drawer for supplemental material, particularly looking for obscure paintings and sketches that had been developed during production of the three films but had never been published.

Originally, the text was designed to be a *factual* write-up about each place, but after reading the drafts we felt the book needed something extra. So we added character — characters, actually, a point of view. Instead of just *social studies* term papers about various imaginary worlds, I created a particular author and voice for each chapter.

For instance, the chapter on Endor is purportedly written by a stranded Imperial scout, stuck on a miserable forest-covered moon that is swarming with those verminous and too-cute Ewoks; the chapter on Hoth is written by a rebel major chronicling the difficul-

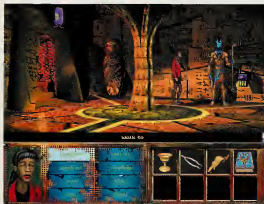
ties of erecting a secret base inside an ice cave under planetary temperatures so cold that much of their equipment refuses to function; an Imperial propaganda minister writes in great detail of the wonderful life on the repressive Imperial capital world of Coruscant.

Then, after nearly two years, our entire pile of material went into the capable hands of graphic designers Megan Eckhardt Youngquist and Peter Landis of the Greenwich Workshop, who were given the daunting task of developing the best possible format and arrangement to display the art and words.

During the course of this project, Ralph McQuarrie and I let our imaginations run wild, and several of the ideas we brainstormed have ended up in my other *Star Wars* projects. I've created numerous other novels for Lucasfilm, and many other stand-alone science fiction novels, but *The Illustrated Star Wars Universe* is a book unlike any other I've worked on — or even seen.

Just wash your hands before you page through it — you won't want to get fingerprints all over the artwork! □

## Harlan Ellison's most famous tale translates compellingly from text to game.



Ellison's participation in *Cyberdreams*' latest creation was integral to the game's success.

**I**FIRST READ "I HAVE NO MOUTH AND I MUST SCREAM" more than twenty years ago. It was then not a new story; Harlan Ellison wrote it in 1966, and I read it in an anthology.

I loathed it.

I read it again a few years later and was astonished. It was a searing story, a hideous story, a perfect story in its way; a first-rate piece of work, one of the finest things in the field I have ever read. I remembered, of course, that I had loathed it when I read it first. Of course I had; how could I not, at age 13? I was then unable to separate loathing for what happens to the characters from loathing for the story.

Egad, if you haven't read it, you have little justification for calling yourself a reader of science fiction. Go forth and find a copy. Believe me, it will affect you more than this review.

"Disturbing, compelling, an adventure you won't easily forget!!!" says the hype from *Cyberdreams*, the publisher three decades later, of the game version of Ellison's classic tale. The three exclamation points are theirs. (*I Have No Mouth and I Must Scream*, designed by Harlan Ellison, David Sears, and David Mullich; CD-ROM for PC compatibles, system requirements: 486/66, 4 megs RAM, 20 megs free, SVGA, MS-DOS.)

Cool! Just like the story! Can it be that we have a game that deserves the accolade of high art, a game of the power of "I Have No Mouth and I Must Scream"?

But the story is so strong. Can it translate? How well? Won't something be lost? Will it be successful in the new form?

And how can one possibly take a work of the impact of "I Have No Mouth..." and bring the tiniest iota of its impact to a game?

I've designed twenty-odd games, and I blench at the prospect. I wouldn't dare to try.

How successful have Messrs. Ellison, Sears, and Mullich been?

The question is wholly unfair. It virtually sets you up for failure.

Of course, it can't be done.

Well, maybe it could; but not in the form of a graphic adventure.

That's what we have here; move from place to place, pick things up, use them, solve puzzles, get through barriers and to the conclusion.

You either like this kind of thing or you don't. Personally, I find graphic adventures mildly entertaining. I'll play one to occupy my attention when I've got a spare few hours, but I don't look to them for a compelling experience.

So to be fair, we must look at *I Have No Mouth...*, the game, as a game qua game, and ask rather: Does it succeed as a game? Is it worth playing? And does perhaps some part of the strength of the story come through?

To these questions, we have to give a qualified positive answer.

First, the graphics are good, though the animation, as in all such games, tends to be repetitive. The music is pleasant without being intrusive. The dialogue is far better than in most graphic adventures; there's a sense of linguistic play, a feeling that someone who actually knows how to write dialogue wrote the dialogue, which is no given in gaming.

I assume we have Ellison to thank for this, at least.

We have Ellison to thank for some of the voiceover, too; he speaks the lines of AM, the insane computer who tortures the characters. He is, in fact, the best voice actor in the game. If, for some reason, he were to abandon writing as a mug's game, he could easily have a second career.

Second, the game is not ineradicably dumb. This may sound like faint praise, but it is not. For too many graphic adventures are. In *I Have No Mouth...*, you will not make it impossible for yourself to win by doing something foolish. You won't have to find an item three pixels by two to win; it's straightforward to find the objects you need, and the solutions to the puzzles are not absurdly abstruse. In other words, the designers have actually thought about

what it takes to make playing a graphic adventure an enjoyable experience rather than a frustrating one, and have applied themselves to the task.

Does it impart any sense of the story?

On this count, the answer is mixed. No, a graphic adventure cannot possibly capture the icy, piercing vigor of the story; no, it cannot disturb, nor can it engage the emotions as the story can. It is not the first-person stream of a fellow



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human's consciousness; it is a third-person window on a set of jerky animators held together by a puzzle of find-use-solve puzzles. Will it engage you? Will it disturb you? Will it make you feel, "Ah! What I would give to design a game/write a story so fine?" Will it frustrate you, make you feel that you hate the game and adore the experience — and feel compelled to play, feel compelled to admire the artistry, feel that you have been given to the soul?

Get real.

Still, still. The medium is a given; a graphic adventure is not a short story. Does it capture the story to the degree that a graphic adventure can?

Perhaps it does. Success in the game comes from acting with compassion, not from striving for power; from rejecting temptation, from persevering. This is the lesson of the story, and no bad lesson for a game to teach. It isn't *Doom*, which in this context is praise.

Let's take another tack. A lot of games try



to involve authors in their creation. Most of the time, they fail. Writers of linear narrative fiction often don't do good work when they try to write prose for non-linear, narrative games — any more than screenwriters necessarily make good novelists, or vice versa. Ellison was involved with the creation of this project — on a more intimate basis than cashing the licensing checks. He did voiceover, he wrote some of the lines, he seems to have worked closely with Mullich and Sears. Does the game gain or suffer by this?

Clearly it gains. Ellison the voice actor is terrific. The dialogue is good. The game is more than competent. For a collaboration of this sort, *I Have No Mouth...* is definitely a win.

And is it a good game? Forget the fact that it isn't the story, isn't art of the same high caliber. Is it a good game?

Actually, yes. It holds your attention. The puzzles and characters are compelling enough to carry you through. The music, voice characterizations, and art vary between first-rate and decent. This is a polished, professional product that the creators and publishers have every reason to be proud of — and which you will enjoy playing, assuming you enjoy graphic adventures.

And yet — and yet. Wouldn't it be fine if they could do a game as superb as the story?

Yes. It would be nice if pigs could fly. Well, interesting, at least, and we'd have a few extra cuts of pork. ☐

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## SCIENCE

Continued from page 37

oldest stars are at least 12 billion to 16 billion years old. Surely they can't be older than the universe itself? What is happening with our measurements that would create a paradox that the contents of the universe could be older than the universe?

**LANDIS:** I think this is one of the most amusing puzzles of modern cosmology, the fact that if you look at the age of the oldest stars, and these are white dwarf stars that have been sitting around for billions of years, they seem to actually be older than the age of the universe.

**KONDO:** Let me speak to this because this appears to be my area of specialization. Actually, what you're talking about is the age of the universe as determined from the recent determination of the Hubble Parameter using the Cepheid variables observed in some galaxies, as compared to the age of stars as determined from what we call the evolutionary track of stars found in clusters of stars that were born at the same time. If you observe stars in a given cluster of stars—in some clusters you have only hundreds, in some we have thousands or tens of thousands—you can determine the age at which the cluster was born. Assuming we have the correct theory for the evolutionary track and we also have correct knowledge of the composition of the gas from which stars are condensed. Now, what they're talking about is the age of the globular cluster stars for which these evolutionary tracks have been determined. In our own galaxy, the age of the stars in the globular cluster must be about 15 billion years.

**LANDIS:** We should mention that the sun, our own star, is about 5 billion years old, so these are very old stars.

**KONDO:** Yes, what we call the first-generation stars.

**LANDIS:** There's a difficulty of course, and that is it is very difficult to tell the age of a star, because you can't just look at its birth certificate and find out when it was born.

**KONDO:** You can't?

**LANDIS:** Stars don't have birth certificates! **KONDO:** That's a pity.

**LANDIS:** That is a pity.

**KONDO:** Anyway, determining the age of cluster stars is fairly accurate. There are assumptions involved, as Geoffrey pointed out, and as I was saying earlier. Now, the distance to those galaxies are determined from Cepheids. The red shifts are pretty accurately determined...but are the distances determined that accurately? We think that we could at least improve the determination of the Hubble parameter by observing more distant Cepheids. The Hubble Space Telescope can observe, with higher angular resolution, Cepheids that were not possible previously. Clearly isolated, so that the variability determination can be more dependable. From that

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they have come up with a value of 80 kilometers per second per megaparsec. That's the expansion rate. Now the bigger that number is, the younger the universe. So if you assume that it's about 80 kilometers per second per megaparsec, and if it applies to the whole universe, then the age of the universe is in the range of 8, 9, 10 billion years, which is younger than the age of stars in globular clusters.

**LANDIS:** There's another unknown, or very difficult to measure parameter when you're trying to calculate the age of the universe from the Hubble constant. And that is the factor known as the deceleration parameter. Because, of course, the universe has a lot of gravity in it. The expansion is slowing down because of gravity, the same way that if you throw a ball up from the Earth, the ball slows down as it goes higher. But we don't know how massive the universe is, so we don't really know very well what the deceleration parameter is, how much this expansion of the universe is slowing down. When people claim to measure the age of the universe based on knowing the Hubble constant, they do so by assuming a guess for this deceleration parameter. But we should really emphasize that it is only a guess by the best models for what we believe the mass of the universe is. And it's not actually a measured parameter. The other big paradox in astrophysics or cosmology today is that we don't know where all of the mass of the universe is. We can't measure the mass of the entire universe.

**SF AGE:** So is this paradox here not a paradox at all? Does it really just stem from the fact that two different sets of scientists are doing different measurements on different things with different factors?

**KONDO:** It could be that the assumptions involved in either of the two determinations are wrong, or maybe both include uncertainties too. So it's not really a paradox in the sense of a philosophical debate. But it's an apparent disagreement of conclusions drawn from the two approaches.

**SF AGE:** I'm assuming from what you're saying that it isn't a paradox, but simply one group or the other using the wrong ruler to do measurements.

**LANDIS:** That is probably the truth. But as a science fiction writer I do find it very interesting to think about, what if it really is true that the oldest stars are older than the universe? Of course, as a science fiction writer I can come up with an answer to that. The interesting answer to that, if you recall our forum on faster-than-light travel (which appeared in the November 1994 issue), we discovered that it's possible that wormholes may have been created at the beginning of the universe, and as we now believe, a wormhole that can travel through space can also travel through time. So I like the possible explanation that the reason that the oldest stars are older than the universe is that stars in these globular clusters have in fact traveled through wormholes backward in time, and that they really are older than the universe,

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because they've traveled backward earlier than the date of their birth.

**KONDO:** There are several things that I would like to add to that. The first is that Fred Hoyle, who is also a science fiction writer with a very good reputation, is saying that the universe has been around a lot longer than ten billion years, and he's not really saying that there was a beginning. And if that's the case, there's really not any inconsistency. Here the universe is indeed expanding, but the emptiness is being filled up by the continuous creation of matter. So this is one possible explanation. As to the question of the matter in the universe, Geoffrey pointed out a very interesting point, which is hotly debated in our profession today. There are at least three lines of reasoning based on which people say that a lot of matter must be missing in the universe. One of which, accounting for the largest missing matter, is based on the theory of the inflationary Big Bang. If the inflationary Big Bang is correct, then the total mass of the universe must be such that it is not quite expanding forever, but not collapsing either; it's just at the borderline, what we call "Q = 1" in astrophysics. And if that value is correct, then we are not observing all the matter we should be observing.

**LANDIS:** But that's a theory. It's not an observation.

**KONDO:** Yes. The other two are based a little bit more on observational evidence. One is based on the rotations of galaxies observed in a number of galaxies. Galaxies seem to rotate as if all the matter in the galaxy were not represented by stars that we can observe.

**LANDIS:** That's why it's called dark matter. We can see the part of the universe that is bright, because we look out and we can see it. But we know that there must be something that isn't giving out light. And we know that because we can't see it.

**KONDO:** So this I think is the observational evidence that's the most convincing of the three.

**SF AGE:** We've been talking so far only about the birth and the age of the universe. What happens at the other end? How far along are we in the life cycle of the universe, and what are the likeliest remaining number of billion years left?

**LANDIS:** In the old days, people believed that the universe might have so much matter in it that not only was it expanding now, but gravity would stop the expansion and make it collapse afterward into a Big Crunch, where the universe comes together into a single point. And if this were true, it would mean that the universe doesn't go on forever, but that a time would come in which once again everything is compressed into a point that is infinitely dense and infinitely hot, and all of us and everything in the universe gets incinerated. That is no longer much believed, because nobody can measure an amount of matter that's large enough to make the universe collapse again into a point. But, as we mentioned, most of the matter in the universe



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is dark, so that we can't see it, so of course it's very difficult to measure. It may be that there's so much matter in the universe that it will crunch again into a point. But that is the least likely possibility from what we know now.

KONDO: There are three possibilities that have been talked about. One was the Big Crunch model. You start off with the Big Bang, expand for a while, and stop; then comes the Big Crunch and the universe collapses back to the original fireball, and then expands again. This is called the Bang, Bang model by some people. The other is where the expansion sort of peters out. It keeps expanding, but it wears out. I think it's probably the most popular today, because it is predicted by the inflationary Big Bang. The other is where the expansion energy is so great that it keeps expanding forever and ever, and the density of matter between particles, not to mention stars, becomes less and less because the expansion increases the distance between particles and objects. The last model is not considered the most popular at the moment.

LANDIS: So the most popular theory at the moment is that the universe does keep expanding, but the expansion slows down as it expands so that the bigger it gets the slower it keeps expanding, and it's exactly on the edge, so that it's almost going to collapse into a single point, but not quite ever. So the universe will last forever. But it will get awfully cold and dark after awhile.

KONDO: Perhaps I can talk about this Hubble parameter. Originally though, when they started determining those quantities, they came up with large quantities, something around a couple of hundred kilometers per second per megaparsec. This means an object that is at a distance of one megaparsec, that is, one million times a parsec, about 3.26 million light-years, expanding or receding from us at that speed. For a while, about a hundred kilometers per megaparsec has been quite popular. When they took a poll at the astronomical meeting several years ago, the majority voted for the Hubble parameter greater than around 75 kilometers per second per megaparsec. Last year at The Hague, after Sydney Vandenberg made a very good case for about a hundred kilometers per second per megaparsec, and Sandage and Tammann made an even stronger case for 55 kilometers per second per megaparsec, the majority voted for "not yet known," which I think is the correct answer. Of the remaining 30 to 40 percent, all but two or three voted for small (Sandage-Tammann) values. The Hubble Space Telescope offers opportunities to determine it better. We really would like to know more accurately what it is, reducing premises and assumptions in determinations.

LANDIS: We should get better values once the HIPPARCOS data becomes available. There is a European satellite called HIPPARCOS that measures the position of stars to great precision. The satellite in fact has finished its life and the experiment is done, but all the data isn't released yet. So we're sort of



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waiting to find out what it learned. The reason this is important, of course, is that as the Earth goes around the sun, there's a tiny little apparent movement of the stars, because you get a slightly different angle to the stars as the Earth goes around the sun. A tiny, tiny difference, very hard to see. But this European satellite measured it to great precision, so it measures how far away the nearest stars are, and of course when we measure how big the Hubble constant is we need to know how far away things are.

**KONDO:** Excellent point! Parallax provides the basic values which have been used to determine the distance to the RR Lyrae and Cepheid. If your original parallax determinations are in error, all the resulting conclusions are in error too. Indeed, parallax is an extremely difficult quantity to determine, and was first accurately determined relatively recently, after the invention of photography. Once the HIPPARCOS results are available, we may have a much better determination of the yardsticks.

**LANDIS:** They're supposed to be available soon they say. What, 1997?

**KONDO:** The problem has been compounded by the actual orbit attained, which was not as originally planned. So, data reduction is taking more time.

**SF AGE:** Do either of you have any closing comments?

**KONDO:** Be clear what your assumptions are, and what the premises are. Oftentimes these are not really made clear. People tend to assume that the conclusions must be correct. They don't realize what the uncertainties are. I think scientific approaches should show everything we do and assume; let everything hang out.

**LANDIS:** I think today we're at the point where we're just beginning to get some very precise measurements of things that previously we'd only had guesses and estimates of, and the new satellites that are doing astronomy are giving us wonderful information, just learning excellent things about the universe that we've never been able to measure from down below the atmosphere. Very soon we will really be able to measure these important parameters of the universe very specifically. Things like—How fast is the universe expanding? How much is it slowing down? How far away are the most distant galaxies? And things like, how old are the nearest stars? And how old are the oldest stars we can see? Satellite-borne observatories are measuring these things. And the next five years will probably be the most fascinating years in all of history for astronomy and I'm sort of happy to be living in a time when we can learn these facts.

**KONDO:** I'm an optimist. Or maybe a pessimist. It depends on how you look at it. Because I think that we're going to be fascinated by new results, not just for five years, but for fifty years, five centuries, even longer. I think that as we learn more, we will find out that we really want to know more. □

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## FORTITUDE

Continued from page 79

one porcelain "altar," where adults who have overindulged with food or drink often kneel and pray for relief, invoking the beer deities, "Ralph" or "Ruth." On weekdays, these altars have other, more mundane uses.

Kwesi Mobutu seemed torn between outrage over Jane's behavior and delight that it was all being recorded. "And what insight did this offer you?" He asked with a tightly controlled voice.

"Oh, with your interest in genealogy you'll love this, Kwesi," Jane assured in a friendly tone. She turned to Nechemia. "You say there couldn't have been any alien interference before the Eukaryotic Explosion, and after that, everything on Earth seems to be part of the same tree of life, right? Neither of those long periods seems to show any trace of outside interference."

The Israeli nodded, and Jane smiled, then continued. "But what about the explosion itself? Isn't that just the sort of sudden event you say would be visible in rocks, if alien garbage ever got dumped on Earth?"

Meyers frowned, knotting his brow. "Well...ye-e-es. Offhand, I cannot think of any refutation, providing you start out assuming a general similarity in amino and nucleic acid coding...and compatible protein structures. That's not too far-fetched. From that point on, prokaryotic and early eukaryotic genes mixed, but the eukaryote seed stock might have come, quite suddenly—"

A short squeal escaped the alien emissary.

"This is true? Your life history manifested such a sudden transformation on so basic a level? From unnuclated to fully competent multicellular organisms? How rapid was this change?"

Meyers shook his head. "No one has been able to parse the boundary thinly enough to tell. But clearly it was on the order of a million years, or less. Some hypothesize a chain of fluke mutations, leveraging on each other rapidly. But that explanation *did* always seem a bit too pat. There are just too many sudden, revolutionary traits to explain..."

He looked up at Jane, with a new light in his eyes. "You aren't joking about this, are you? I mean, we could be onto something! I wonder why this never occurred to us before?"

The captain uttered a short laugh. "Trust an Australian to come up with it. They don't give a damn what you think about their ancestors."

A flurry of motion drew our eyes to the tunnel leading to the N'Gorm ship, just in time to catch sight of the envoy-entity, fleeing our presence in a state of clear panic. A seal hissed shut and vibrations warned that the huge vessel was about to detach. We made our own prudent exit, hurrying back to our ship.

Last to reboard was Kwesi Mobutu, wearing a bleak look on his face, paler than I had ever seen him. The African aristocrat winced as Jane Fingal offered a heartfelt Australian

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prayer of benediction, aimed at the retreating N'Gorm frigate.

"May Ruth follow you everywhere, mate, and keep you busy at her altar."

Jane laughed again, and finished with a sharp, flushing sound.

MANY YEARS HAVE PASSED SINCE THAT epiphany on the spacelanes. Of all of the humans present when we held the fateful meeting, only I, the one made of durable silicon and brass, still live to tell an eyewitness tale.

By the laws of Earth, I am equal to any biological human being, despite galactic rules that would let me be enslaved. No noble genes lurk in my cells. No remnants of ruffians who went *slumming* long ago,

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**CONTRIBUTORS**

**S**INCE THE PUBLICATION OF HIS FIRST piece of fiction in *Startling Stories* in 1949, James Gunn has focused his career equally on both fiction and criticism. His most famous novel is *The Immortals*, published in 1962, which was later made into the network TV series *The Immortal* in 1969. He has been awarded the Pilgrim Award by the Science Fiction Research Association for his book *Alternate Worlds: The Illustrated History of Science Fiction*. Following up on his critically acclaimed *Stempunk Trilogy*, **Paul Di Filippo's** *Ribofunk* will soon be appearing from Four Walls, Eight Windows. His new collection will contain all of his short stories in his newly invented ribofunk genre (including "Up A Lazy River," previously seen in these pages), plus one new novella. After winning a grant from the Rhode Island State Council on the Arts last year to aid in the completion of his novel *Piezy Dice*, he is this year acting as one of the panelist judges in the fiction category.

**Eric T. Baker** has been published in *F&SF*, and will see a new short story out soon in *LASPM*. His agent is currently marketing his first novel, *Kriegspiel*, an SF police procedural set on a deep colony ships. He attended the famed Clarion SF Writers Workshop in 1969, and makes his home in Vienna, Virginia. **Richard Parks** has stories due out in the Esther Friesner-edited "vampires in the arts" anthology *Blood Muse*, and the magazines *Abrupt Edge*, *Tomorrow SF*, *Adventures of Sword and Scurry*, and *Dragon*.

**Mary Turzillo** has been fascinated with wonderful life forms since, at age eight, she found her first trilobite fossil and identified it in *The Book of Knowledge*, purchased for a dollar at a sidewalk sale. She has work coming out in the anthologies *How to Save the World* and *The Ultimate Dragon*, as well as the magazines *LASPM* and *F&SF*. Over a twenty year career in adventure gaming, **Greg Costikyan** has designed over two dozen commercially published games, five of them Origins Award winners.

**David Brin** has written some of the most important SF novels of the '80s, *Startide Rising*, for which he won both the Hugo and Nebula awards, and *The Uplift War*, which won a Hugo. He has recently been chosen to

write a novel in Isaac Asimov's *Foundation* series. His most recent novel, *Brightness Reef*, was our lead book review last issue. **Chris Moore's** cover paintings have appeared on everyone's books—from Ben Bova, Arthur C. Clarke, and Philip K. Dick to William Gibson and Bruce Sterling. He lives and works in Kent, England.

**Don Webb** has had over a hundred stories published in genre magazines. His chapbook *Seventh Day and After* is still available from WordCraft of Oregon. Webb lives in Austin, Texas, with his wife Rosemary. **Todd Lockwood** has seen his SF art appear in *LASPM*, *Analog*, and *Dragon*. His art has also graced print ads and billboards for Coors, which is fitting, for he makes his home in the suburbs of Denver where he lives with his wife, three kids, a cat, a rat, and a rabbit.



Allen Steele



Don Webb

**A**LLEN STEELE IS FOLLOWING UP HIS critically acclaimed novels *Orbital Decay*, *Lunar Descent*, and *Clarke County*, Space with his latest, *The Tranquility Alternative*, due out in March as an Ace hardcover. Spring will bring his newest short story collection, *All American Alien Boy*, from Old Earth Books. He is hard at work on his new novel, *The Gomerrah Enception*, though he warns his loyal readers that the title will undoubtedly change two or three times before publication. **Michael Dubisch** made his first illustration sale to *Fantaco's Goresbriek* #6 in 1987. He is a graduate of the School of Visual Arts, and his cartoons have appeared in every issue of *High Times* for a number of years.

By the time you read these words, **Elizabeth Hand** will have learned whether she has won a World Fantasy Award in two categories. "Last Summer at Mars Hill" is nominated in the novella category, while *Waking the Moon* is up for best novel. Her novelization of the Terry Gilliam movie *12 Monkeys* (see our movie column this issue) will be out shortly. **Kevin Anderson** published his first novel in 1988, *Resurrection, Inc.*, encompassing both horror and SF. Since then, he has published three novels in the *Gunsword Trilogy*—*Gunsword*, *Gameplay*, and *Game's End*, as well as two novels in collaboration with fellow SF writer Doug Benson. □



James Gunn



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